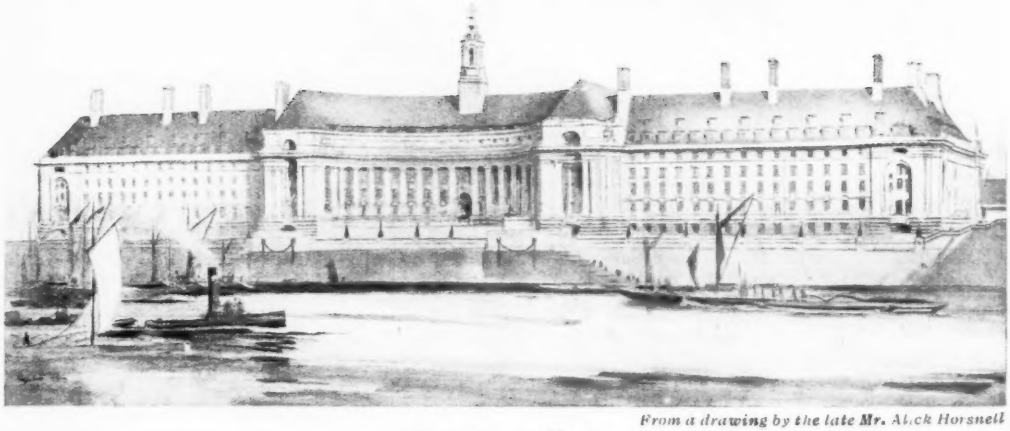


From a drawing by the late Mr. Alick Horsnell

THE COUNTY HALL

The New London County Hall*

BY RALPH KNOTT [*F.*] AND W. E. RILEY [*F.*], R.B.A.

(*Read before the Royal Institute of British Architects, Monday, 22 January* 1923.)

IT can well be imagined that the discharge of all the multifarious responsibilities that are borne by the London County Council involves the employment of a large staff, and that if these functions are to be efficiently and conveniently discharged, it is almost a necessity that such a staff should be suitably housed in one building, which would also include proper provision for the civic representatives. The Council's work has, however, developed and increased in such a way that the accommodation originally provided for it soon became inadequate, and increases in staff were met by the leasing of outside buildings in the neighbourhood of the old County Hall at Spring Gardens, which led eventually to the central office staff being distributed over 25 blocks of buildings, on leases having unexpired terms varying from a few months to many years. Great inconvenience was caused in more recent years in administering various departments, as not only were the departments and staff separated in a large number of distinct buildings, but in many cases their distance apart was considerable, and in one extreme case the distance was nearly a mile from the County Hall at Spring Gardens. Several of the departments had their accommodation distributed over two or more buildings, and in the case of the Architect's department the staff were, at one time, spread over no fewer than ten of these buildings. As a number of the offices were in what were formerly private houses, the accommodation was far from being suitable for conducting the work, which was carried on in a wasteful and inconvenient manner. The rental value of the buildings in the neighbourhood of Whitehall and Trafalgar Square was necessarily high under such circumstances.

The L.C.C., many years ago, set itself to deal with the problem that arose, and considered the suitability of various sites for the building of a new County Hall that would accommodate representatives and official staff in a suitable way. Sites were considered in Parliament Street, Trafalgar Square and the Adelphi, all eventually abandoned in favour of one adjacent to the Thames and the southern approach to Westminster Bridge—where, in fact, the new building now stands. This site was acquired in April 1905 at an approximate cost of

* The Paper was read by Mr. Riley.

£600,000, and as its area—including 2½ acres of reclaimed foreshore—was about 6½ acres, such cost works out at a figure approaching £100,000 an acre, a relatively cheap price as compared with the cost of other sites considered, which would have worked out at nearly £350,000 an acre for the Parliament Street site, over £400,000 an acre for the Trafalgar Square site, and £270,000 an acre for the Adelphi site.

A good deal of credit attaches to Mr. J. D. Gilbert (an old member of the Council) for the acquisition of the river site, for as far back as the year 1898 he advocated—as a part of his proposal for a southern river embankment between Westminster and Blackfriars Bridges—the erection of a new County Hall and offices on land that would become surplus from such an improvement if carried out. It is much to be hoped that the further section of a southern embankment that has now been formed in front of the County Hall may definitely be continued up to the City and effect an improvement in that section of the river that has for long required attention to bring the two sides of the river more in harmony with one another and with the requirements of a great city. It is no small thing that Mr. Gilbert's advocacy of the substitution of a regular and dignified embankment for the present haphazard and somewhat squalid buildings that now line the southern side of the river should have resulted in the desirability of the change being recognised to even its present extent, and the consideration given in more recent years to the question of a new Charing Cross Bridge has further impressed on the public mind the value of proper consideration being given not only to the more purely practical factors in civic or commercial life, but also to the value of improving the amenities of London whenever it becomes possible to do so.

A site having been acquired in 1906, steps were taken to hold, in the following year, an international competition for designs for the new building, and advice was given by this Institute—as members are well aware—in this connection. The proposal was to have a competition in two stages, the first being an entirely open one from which ten designs would be selected, and at the final stage eight other leading architects would also be invited to submit designs. Mr. Norman Shaw and Mr. Riley, the Council's official architect, were to act as assessors in the first stage of the competition, and subsequently a third assessor was to be selected by those competing in the final stage. The Council decided to hold the competition upon this basis, and that not less than ten or more than fifteen designs should be selected by the assessors in the preliminary stage, and that all competitors in the final stage should receive a fee of 200 guineas. The conditions were accordingly drawn up. One of these conditions—considered desirable in the Council's interests—was that Mr. Riley should be eventually associated with the selected architect, in order that he might deal with aspects of the problem necessary to secure such a building as the Council required, and watch the economic side.

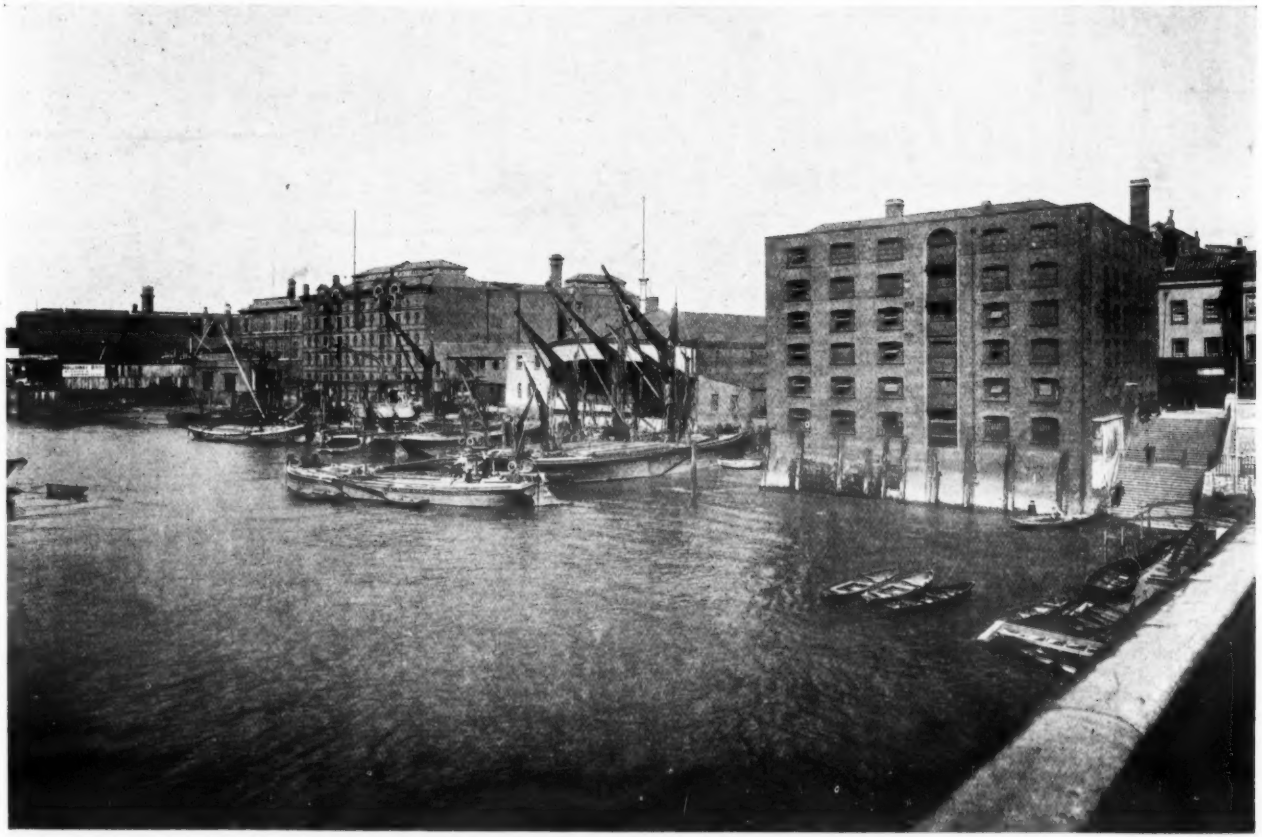
In the preliminary stage of the competition there were sent in 99 designs, the work of 152 architects, some of whom worked independently and others in collaboration ; eight of these architects were of foreign birth. The designs in this stage of the competition were received in August 1907.

The competition designs in the final stage were received in January 1908—Sir Aston Webb having in the meantime been selected by a majority of the final group of competitors as the third assessor—at the end of which month the assessors' award was declared showing that Mr. Ralph Knott was the author of the successful design. This was described as being a forcible and artistic suggestion which conveyed the purpose for which it was to be erected ; that it was almost entirely without costly and unnecessary features ; and the approval of which was made subject to various modifications, including that of the central projection on the river front, and that, suggested by Mr. Knott himself, of omitting the large flight of steps into the river beyond the embankment.

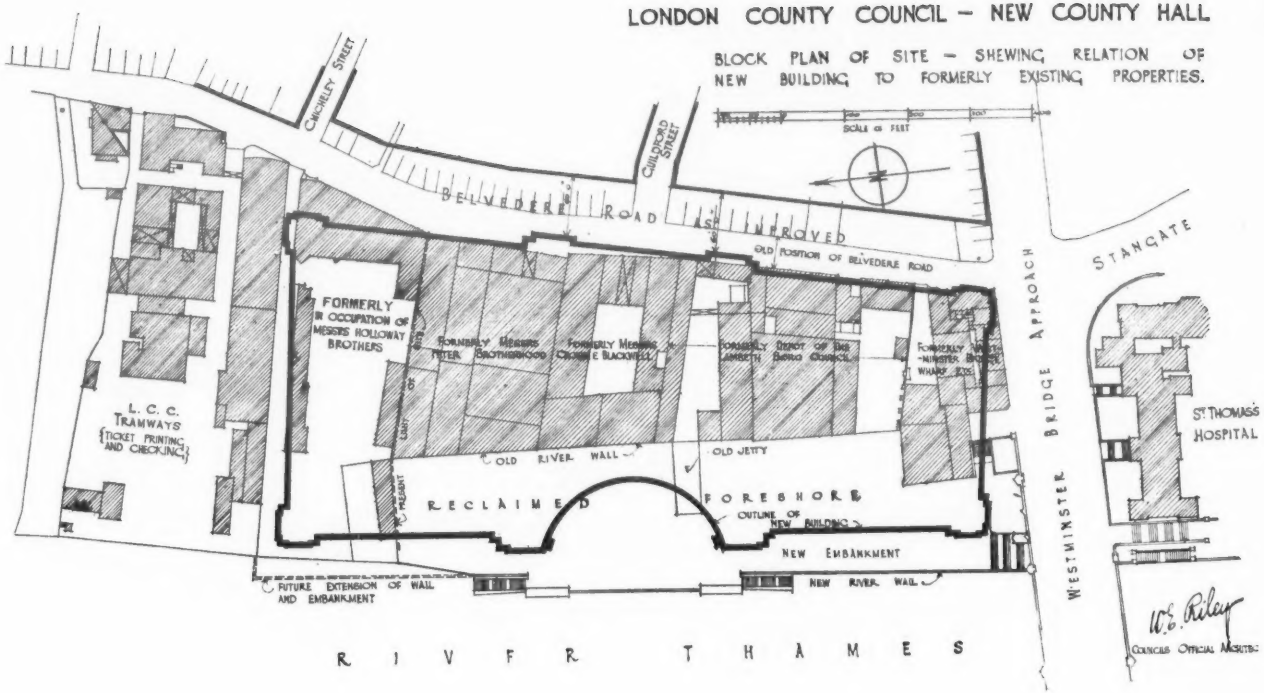
Mr. Knott's design was accordingly accepted. It was subsequently modified on the lines suggested by the assessors, a slightly projecting segmental bay and flights of steps parallel to the embankment being substituted for the large projecting flight of steps. The design was further modified by the omission of a cross colonnade in the central portion of the river frontage, the " order " being carried round the crescent.

Nature and Extent of Accommodation.

The Council felt that the accommodation ultimately to be required depended mainly on the action of Parliament in imposing new duties on the Council or in withdrawing some of its existing functions, and as this could be only a matter for speculation it based its calculations on its existing



View of Former Buildings on the Site


LONDON COUNTY COUNCIL – NEW COUNTY HALL
BLOCK PLAN OF SITE – SHEWING RELATION OF NEW BUILDING TO FORMERLY EXISTING PROPERTIES.
CHICHELEY STREET
GUILFORD STREET
BELVEDERE ROAD
SCALE OF FEET
N
APPROVED
OLD POSITION OF BELVEDERE ROAD
STANGATE
FORMERLY IN OCCUPATION OF MESSRS HOLLOWAY BROTHERS
FORMERLY MESSRS PITTER BROTHERHOOD
FORMERLY MESSRS CRUSHA & BLACKWELL
FORMERLY DEPOT OF THE LAMBETH BOARD OF WORKS
FORMERLY WEST-MINSTER BOARD WHARF
L. C. C. TRAMWAYS (TICKET PRINTING AND CHECKING)
OLD RIVER WALL
OLD JETTY
RECLAIMED
FORESHORE
OUTLINE OF NEW BUILDING
NEW EMBANKMENT
FUTURE EXTENSION OF WALL AND EMBANKMENT
NEW RIVER WALL
WESTMINSTER BRIDGE APPROACH
ST THOMAS'S HOSPITAL
RIVER THAMES
W. E. Riley
COUNCILS OFFICIAL ARCHITECT

duties, making such allowance as seemed reasonable for extra requirements when the services and the county should be fully developed.

It was only in the accommodation for the use of members that an attempt was made to anticipate possible legislation, and provision was, therefore, made for an increase in the number of members up to about 200. If a council chamber were provided for 137 only—which was the number of members at the time it was decided to proceed with the erection of the new County Hall—it would be extremely difficult to enlarge it afterwards ; and any possible enlargement would probably lead to unsatisfactory results. A similar argument applies in a less degree to all rooms for the common use of members, while any superfluous rooms can always be turned to good use for the accommodation of the staff.

In order to fix a reasonable standard of accommodation, much attention was paid to the amount of floor space which should be allowed for officials of the various classes, and with this object several large blocks of modern offices, both public and commercial, were inspected. Although the standard varies slightly in the different departments, the undermentioned approximate areas generally obtain :—

	Square feet
Heads of departments	400
Chief assistants	250
Heads of sections	150
Draughtsmen	120
Clerks engaged on committee work and clerks dealing with plans	100
Ordinary clerks	80
Typists and assistants engaged on routine work	50

These superficial areas in a well-lighted and ventilated building will be quite adequate for the efficiency of the work and the health of the staff.

Another question which the Council had to consider was whether a completed building should be erected on the portion of the new site excluding Messrs. Holloway's premises, or whether so much of the scheme, with any necessary modifications, as would extend from Westminster Bridge to those premises should be erected. Accommodation was required for a minimum of 137 members and a staff of 2,100. On the site—less Messrs. Holloway's premises — accommodation could be provided for 200 members and a staff of 2,270, and on the whole site for 200 members and a staff of 2,850. The Council was advised that not less than seven years would elapse before the whole of the staff could be housed in the new building. By that time the Council would be in a position to take over Messrs. Holloway's premises if it so desired, and the Council would have the choice—according as the experience gained in the construction of the new building and the variation in its work dictated—either of holding its hand or of proceeding with the building on the rest of the site. It was accordingly decided to proceed with so much of the scheme as related to the portion of the site excluding Messrs. Holloway's premises.

Widening of Belvedere Road.

The Ecclesiastical Commissioners were freeholders of part of the site of the new County Hall and of property on the east side of Belvedere Road. An agreement was come to with them, by which the Council was at liberty to erect the new building to the then existing line of frontage on the west side of Belvedere Road a building 60 feet in height to the top of the parapet, but for every three feet by which it was desired to increase the height of the building beyond this limit the frontage had to be set back two feet.

The average width of the road at this part was only 37 feet, and it was felt that, if the Council's site was to be utilised to the fullest advantage, and if proper means of access to the new building were to be provided, it was essential that the road should be widened. A widening of 60 feet by setting back the frontage on the east side of the road would provide a uniform frontage on the west side, thus enabling an area of about ·15 acre to be added to the Council's site. Moreover, as the Council would be under no obligation, if it desired to increase the height of the building to more than 60 feet, to set back the frontage, the area of the effective building would be increased by ·42 acre.

The property at the junction of Westminster Bridge Road and Belvedere Road had been demolished and the adjoining site in Belvedere Road was vacant, so that a favourable opportunity was presented for undertaking the improvement. The Council, in May 1908, approved the scheme, which was forthwith proceeded with. The net cost was estimated at £44,500, but the Council has sanctioned extensions of the improvement (as opportunity offers) as far as Chicheley Street, and these have increased the estimated net cost to £56,950.

The widening, besides increasing the facilities for traffic, improves the lighting of the rooms on the east side of the new building, and allows this frontage to be seen to greater advantage.

Embankment Wall.

Tenders were invited from selected firms for the construction of the embankment wall, and the lowest, which was submitted by Messrs. Price and Reeves, was accepted. The engineering work was designed by and executed under the supervision of the Council's chief engineer, Mr. (now Sir) Maurice Fitzmaurice, C.M.G. The architectural features of the central part of the wall were designed by the architects.

Under the Council's Act of 1906 for the construction of the new County Hall, power was given to enclose the foreshore of the river forming the western boundary of the acquired site. By so doing an additional area of nearly 2½ acres became available, and accordingly, and also with the object of making a suitable river frontage for the buildings, a new river wall was built.

A wall already existed in front of St. Thomas's Hospital, on the up-stream side of Westminster Bridge, and the new wall outlines the continuation of the line of the river on the down-stream side. As regards its main features, it was obviously desirable to make them similar to those in the embankment walls already existing on both sides of the river, though the method of construction and many details of work were different. The wall is composed of Portland cement concrete, faced with granite ashlar work, and surmounted with an ornamental granite parapet, the granite being obtained from Aberdeen and Cornwall. The centre portion of the wall, which is flanked by two flights of steps leading to the river, forms an important architectural feature of the whole County Hall scheme, and the granite there has been left with a rough rock face.

The wall is founded on the clay underlying the ballast which extends all through the Thames valley. Consequently in sinking for the foundations the whole of the bed of ballast had to be traversed, together with the Thames mud overlying it. A solid and watertight foundation has thereby been rendered possible.

In settling the depth to which the foundation should be carried, allowance had to be made for proposals for deepening the river bed below Westminster Bridge. On this account the foundations were taken down to 35½ feet below Trinity high-water mark. The average original level of the foreshore where the wall is built was only about 2 feet above low-water mark. A temporary dam, therefore, was necessary, not only to construct the wall, but also to allow the work of excavating for, and putting in, the foundations of the Hall to proceed rapidly. The form of dam decided upon by the chief engineer was a single pile dam, composed of a row of tongued and grooved whole timber piles, 14 inches square in section. These piles had to be driven through 4 feet of mud and 11 feet of ballast before they reached the clay, which they penetrated until their points were 9 feet below what would be the bottom of the new wall. The dam was strutted with timber struts and rakers to other temporary piles driven at the rear, and, owing to the depth of the mud behind and its compressibility, much difficulty was experienced in finding a reliable support to withstand the very considerable pressure—about 6,000 tons at high water.

The construction of the wall was started in January 1909, and completed in September 1910. The total cost amounted to £58,000.

The northern extension of the river wall (in front of Messrs. Holloway's premises), forming the remaining one-third of the length, and a return wall sealing up the northern end of the site were built inside a dam composed of steel sheeting strutted with timber. The contract was let just before the commencement of the war, and, owing to the necessity of protecting the site from inundation, work was allowed to proceed until its completion in May 1917. This portion of the work was carried out under the supervision of the present chief engineer of the Council, Mr. G. W. Humphreys, C.B.E., who succeeded Sir Maurice Fitzmaurice in 1913.

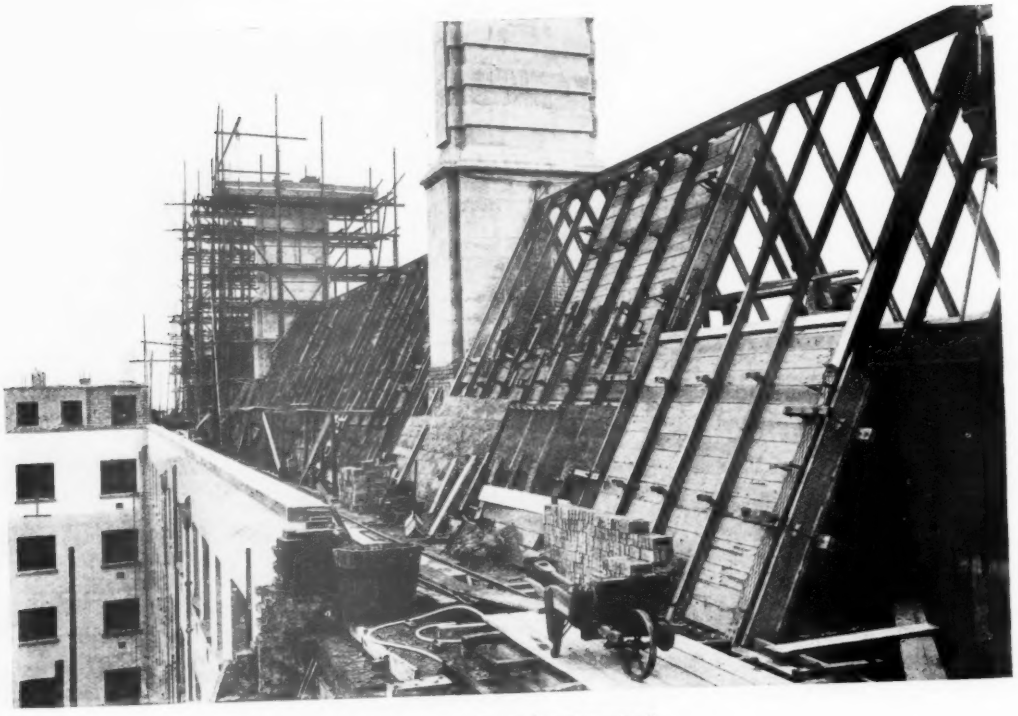
Concrete Raft and Retaining Walls.

As a result of trial borings it was ascertained that the sub-soil consisted approximately of 12 feet of made ground, 7 feet of Thames mud, and 13 feet of ballast, under which occurs the London clay. The foundation for the new building has been formed with a " raft " of Portland cement concrete on the top of the ballast stratum. It was decided to adopt a thickness of 5 feet throughout for the raft, and it is laid directly on the ballast bed, which is found at a level of −8 O.D. This course was

General View from South

General View from South, showing Inundation.

Radiating Steel Beams in Floors of Crescent Block



Steelwork in Roof Construction

adopted in order to save time and to expedite the work, the drawings for which were not then matured, and this construction had the advantage of being sufficiently stable to carry any loads which it might be required to place upon it.

Owing to the depth of this foundation below the roadway (about 23 feet) retaining walls were necessary on the south and east sides of the site, formed of concrete and varying in thickness from 10 feet at the base to 4 feet at the top. The embankment wall, etc., previously referred to, forms the retaining wall on the west side, and, as the northern end of the site is still occupied with the department dealing with the Council's tramways, this boundary remains to be dealt with. Tenders for the work were invited from selected firms. The lowest, amounting to £46,900, was submitted by Messrs. F. and H. F. Higgs, and was accepted. Their contract was completed in the autumn of 1911.

During the progress of the excavations remains of a Roman boat were discovered upon the site of Section B. It was lying N.E.–S.W., with its bow towards the shore, 7 feet below Ordnance Datum, 19 feet 6 inches below high water, and 21 feet 6 inches below the level of Belvedere Road. It measured approximately 38 feet in length and about 18 feet beam. A considerable portion of the stern end was missing, but, so far as can be judged, it would seem to have been about 60 feet in length, with a beam of about 16 feet. In the boat itself were found four bronze coins of (i.) Tetricus the Elder in Gaul, A.D. 268–273 ; (ii.) Carausius in Britain (2), A.D. 286–293 ; and (iii.) Allectus in Britain, A.D. 293–296 ; portions of leather footwear studded with iron nails, and a quantity of pottery, etc. The presence of a belaying pin and a block to contain two pulleys and the massive construction suggest that the vessel may have carried sail. Near the boat were found two British spear-heads, a Celtic iron dagger and bronze scabbard with ornamental terminations, several horseshoes, two coins of the first century A.D., and fragments of bowls.

Substructure.

As soon as practicable, arrangements were made for the construction of the substructure of the new building—viz., from the top of the concrete raft to the ground floor level, a height of 24 feet 6 inches. Tenders were invited from selected firms, and the lowest, amounting to £47,738, which was submitted by Messrs. Chas. Wall, Ltd., was accepted. For convenience of construction, the building was divided into three sections :—A, central ; B, southern ; C, northern. The tender comprised the construction of the substructure of the first section, A, and the completion of the raft foundation work and retaining wall in Belvedere Road to the north of Guildford Street. The Council decided, in accordance with the conditions of tender, to require Messrs. Wall to construct the remaining two sections, B and C, at the schedule of prices included in the original contract. Messrs. Wall's contract was completed in March 1913.

The Plan.

The plan adopted for the building embodies various features that were subsequently considered desirable to produce a satisfactory arrangement of plan, including the straightening up of the old irregular Belvedere Road frontage to a new improvement line. As now planned, the council chamber forms the centre of the building, being placed at the intersection of the longitudinal and two transverse axes, the latter being at right angles to the river and Belvedere Road fronts respectively. The cross blocks are placed at right angles to the longitudinal axis, which, as it happens, is practically due north and south, and in all blocks direct natural lighting is provided to both the rooms and corridors. The members' courtyard, with entrance drive from Westminster Bridge approach, is an interesting feature of the plan. By its means, members of the Council are brought in direct touch with their own apartments in the building, centring around the council chamber.

Another means of access to the members' portion of the building, intended primarily for ceremonial purposes, is from the large entrance hall (85 feet by 32 feet) in the centre of the Belvedere Road front, at the ground floor level, from which a wide straight staircase leads up to the eastern lobby of the chamber.

The accommodation, after full consideration, was arranged as follows :—The representatives have accommodation assigned to them around the council chamber. It was, therefore, necessary to decide where the main entrance could be most conveniently arranged, and Westminster Bridge Road was fixed upon as the principal business entrance, and Belvedere Road for the ceremonial entrance. The accommodation required for the representatives comprises cloak rooms, committee rooms, and

private rooms for the chairmen of committees, and in the centre of the crescent are placed the chairman, the vice-chairman, the deputy-chairman of the Council, and the whips of the parties. The reading room, library and refreshment rooms are also on the river front.

It was found essential that certain chief officers (with their personnel) should be on the same floor, and this formed a key for placing the staff of each department, which is either immediately below or above each chief officer's room.

On completion of the substructure, the main contract for the superstructure commenced in August of 1913, and was timed to be completed in three years, the contractors being Messrs. Holland and Hannen and Cubitts, Ltd., of Gray's Inn Road. As will be readily understood, the intervention of the war upset all calculations of time, and otherwise, with this as with other undertakings of a similar kind. Work was eventually stopped, and only resumed in the summer of 1919.

The walling generally is of London stock bricks, strengthened where unusual loads are encountered with blue brickwork in cement. Floor and flat roofs generally are of the usual steel joist and concrete construction. The structural work includes built-up steel stanchions where required by the planning of the building ; and the steel framing for the roof, which includes two floors of offices, has required special treatment, owing to its somewhat unusual form and the heavy loads to be carried.

Steelwork.

During the earlier stages of the design, careful consideration was given to the question of the extent to which steel should be employed in the building, and the comparative advantages of reinforced concrete and ordinary steel joist construction were investigated. It was seen that the massive character of the piers and walls, required to give effect to the architectural design, rendered unnecessary the general use of steel stanchions or of anything in the nature of a steel framework.

The investigations were, therefore, made chiefly with the object of ascertaining the most suitable construction for the floors and roofs, and, as a result, it was decided to use steel girders and joists cased in concrete and designed in accordance with the requirements of the 1909 Act.

Provision was made for the following superimposed loads :—

	Lb. per sq. ft.
Office floors generally	100
Basement floors (for storage purposes) ..	224
Loft floors	75

The maximum pressures allowed on brickwork and concrete were those permitted under the 1909 Act already referred to.

As an exception to the general rule, stanchions and girders of heavy construction are to be found in Block 2, where the large committee room and offices on the upper floors are supported over the boiler-house.

Probably the most interesting features in the steelwork occur in the floor of the council chamber, in the roof, and in the construction of the fleche.

The framework of the roofs generally commences with riveted plate girders, the ends of which receive support at the fifth-floor level. The girders were built up in a bent form, one portion following the slope of the roof from the fifth to the sixth floors, and the remaining portion forming a horizontal main girder in the sixth floor. The other end of this girder receives support from brickwork or from other girders at the level of the sixth floor. A second built-up girder, also with an inclined leg, is carried by each of the sixth floor main girders, and the horizontal portion of this second girder provides the support for joists forming the loft floor.

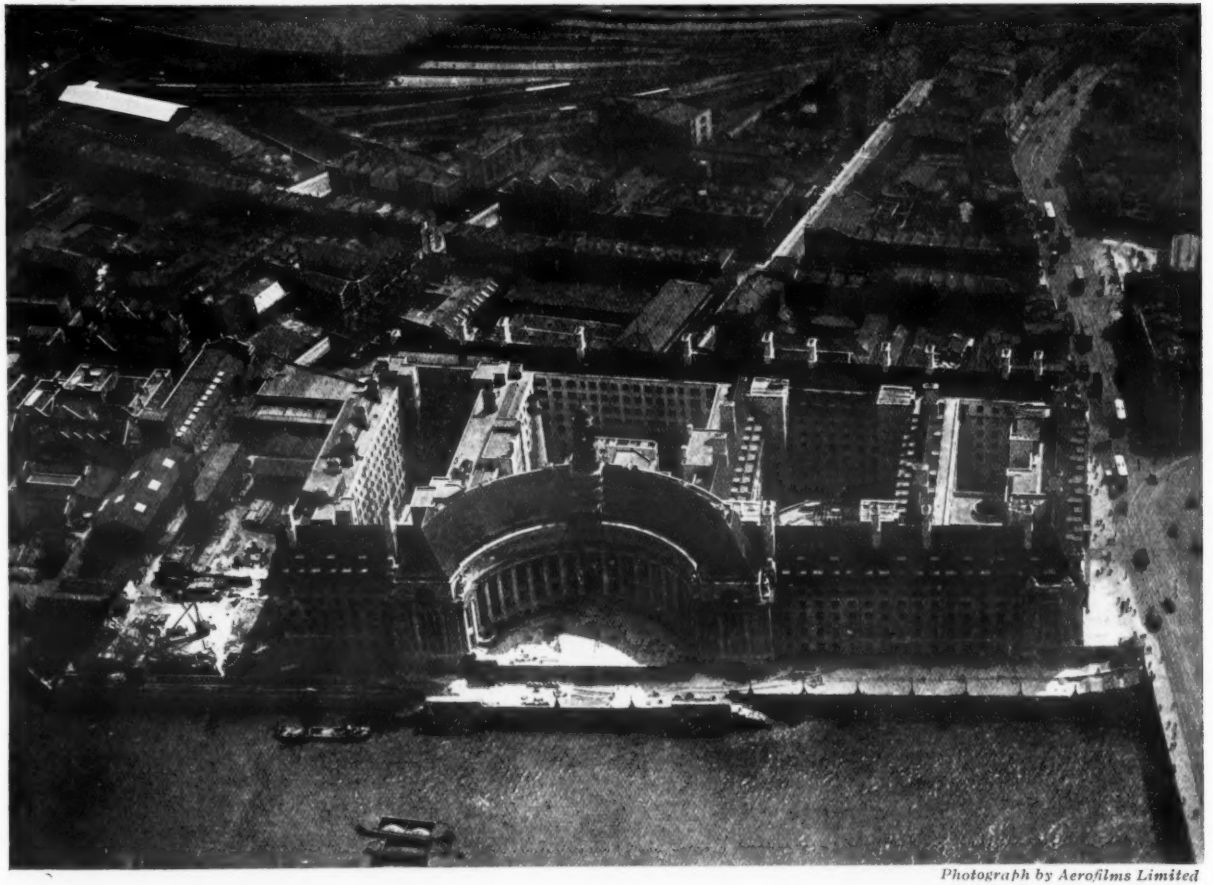
The roof above the loft floor is in the form of an " A " frame of steel joists, attached at the foot to the main girders in the loft floor, and well stiffened by diagonals of angle steel. Steel joists and purlins have been employed, to which steel rafters, 4 inches by 3 inches joist section, are secured.

The approximate weight of steel used in the structure is 8,000 tons.

Messrs. Whitaker, Hall and Owen were the consulting engineers for the constructional steelwork, and the firms entrusted with the execution of portions of the work were Messrs. Chas. Wall, Ltd., Messrs. Dorman, Long and Co., Ltd., Messrs. E. C. and J. Keay, Ltd., and Messrs. Joseph Westwood and Co., Ltd. The commonly experienced difficulties in the supply of structural steelwork were a great handicap to progress.

Treatment of the Interior.

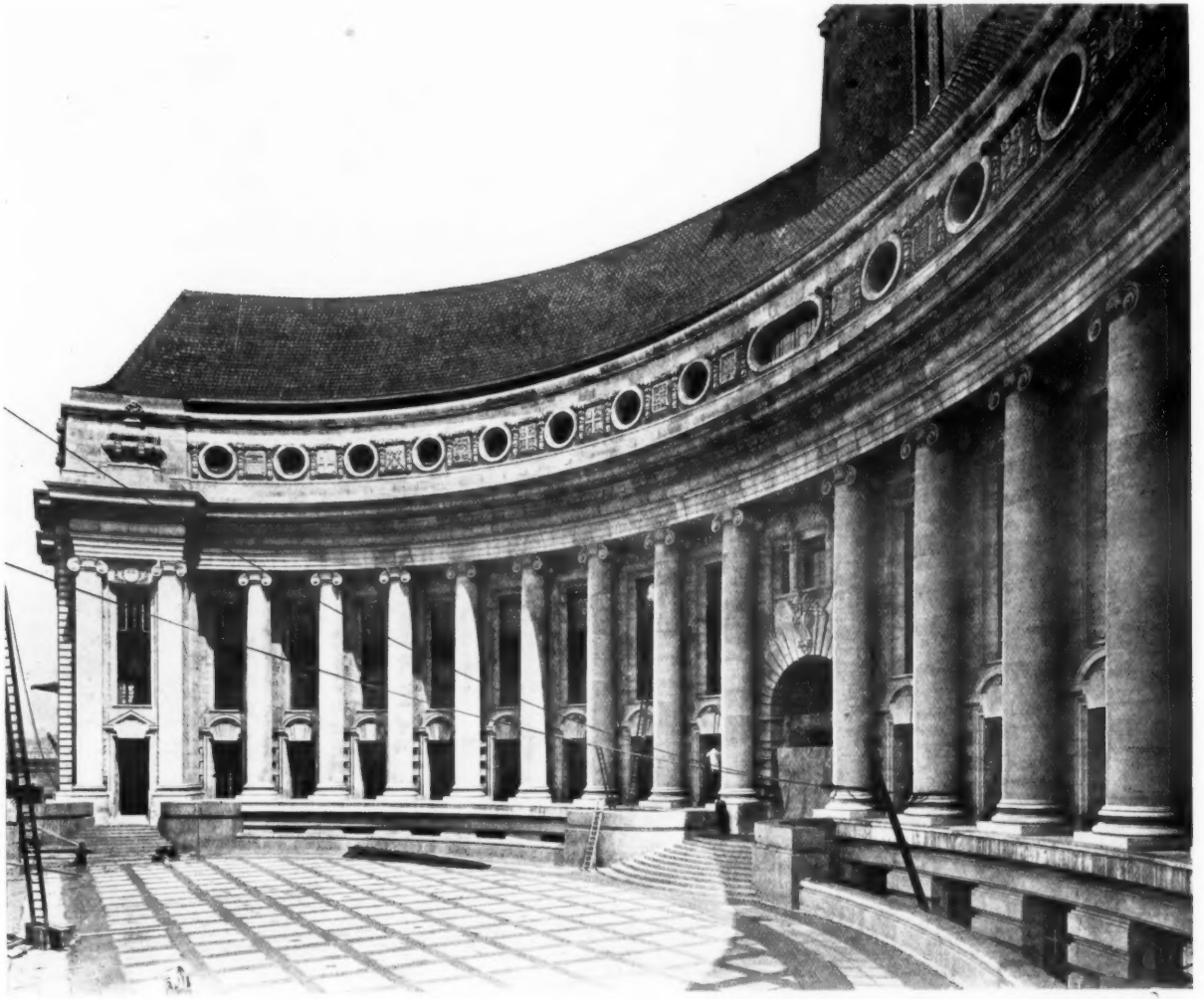
The ceremonial entrance from Belvedere Road has a staircase 15 feet in width, and its side walls, which are lined with marble, support a colonnade carrying the barrel-vaulted ceiling of the staircase



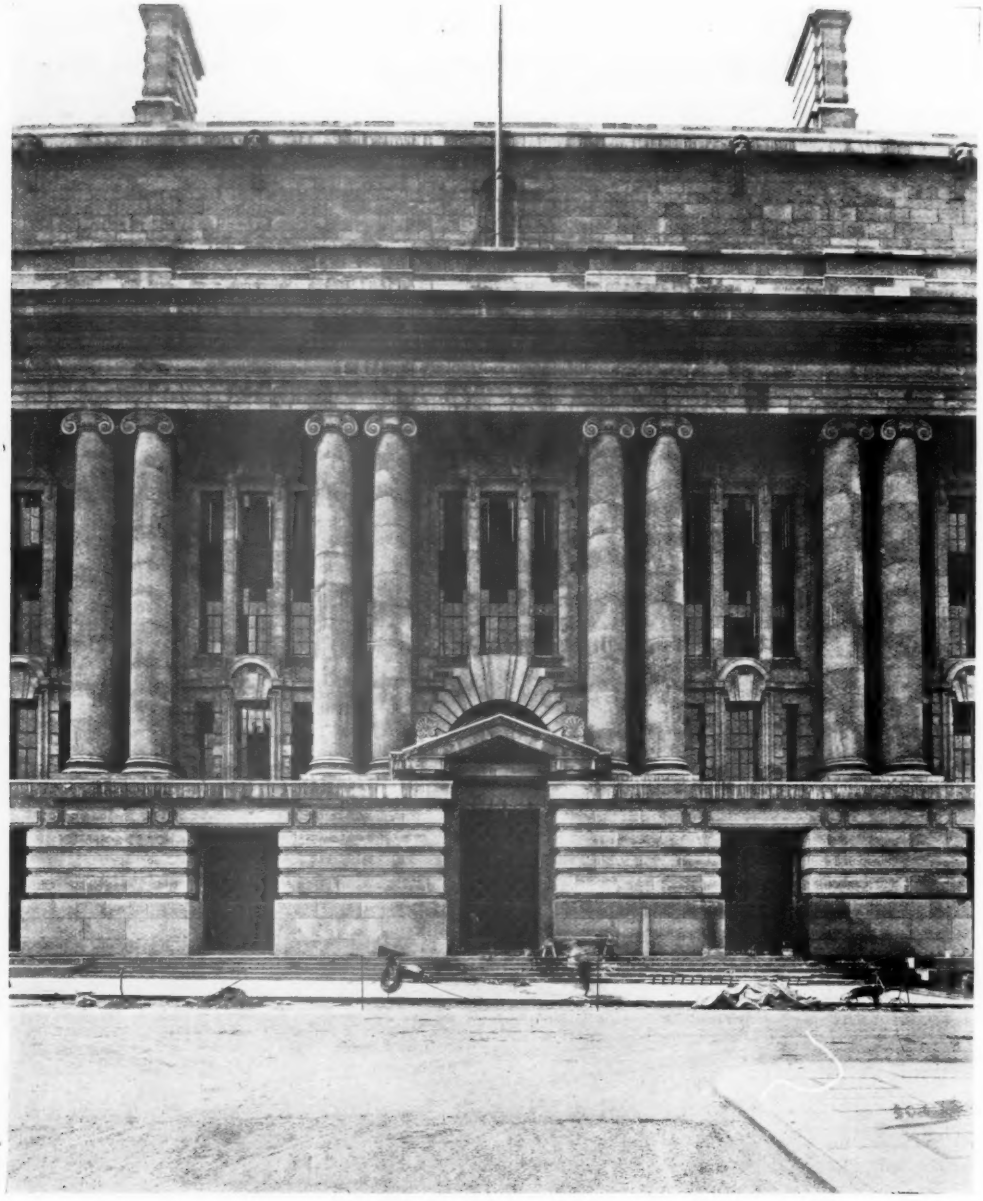
Photograph by Aerofilms Limited

VIEW OF BUILDING FROM THE AIR

VIEW FROM THE SOUTH-EAST



THE RIVER CRESCENT AND MEMBERS' TERRACE



CENTRE OF BELVEDERE ROAD FRONT, SHOWING MAIN ENTRANCE

intersected by the groins of the semi-circular windows which light it. The walls of the corridor and lobbies surrounding the council chamber, with their cross arches, are lined with white marble—a considerable amount of which is Pentelic, from the old Athenian quarry—relieved by bands of Sienna or Cipollino. The columns (which are freely used in the decorative treatment of this portion of the building) are of black Belgian, Bleu de Savoie, or Ashburton marble. The finish of the marble generally is that known as " eggshell " polish. The square voting lobbies (which occur north and south of the chamber) are top-lighted, and are lined with Indian laurel wood panelling up to the column screens. The principal floor corridor is vaulted in plaster, and lined below with oak panelling. It is 10 feet in width, and on office floors above 7 feet 6 inches.

Council Chamber.

With regard to the chamber itself, the plan is approximately octagonal, with three entrance doors and one private door for the chairman, and lighted by four long-shaped windows, above the high dado, in the shorter sides. Above the entrance doors occur spacious galleries (seating about 50 persons each), which overlap the lobbies outside, on the level of the chamber floor. Three galleries are for the public, and one for use of the Press. The height of the chamber is 55 feet, and its area about 3,500 square feet. The walls are lined with a high marble dado up to the gallery level—the plinth and capping are of black Belgian, and the filling between them of Greek Cipollino, from the Island of Euboea, the quarry of which, up to twenty years ago, had not been worked since the time of Justinian. Above this the walls have a plaster finish, the ceiling being of decorative plaster.

The columns supporting the lintols of gallery openings are monoliths of rare Veine Dorée marble, quarried over 5,000 feet above sea level in the Italian Alps. The seating is arranged on the usual horseshoe plan, stepped up from the central " well " of the floor, and the joinery is carried out in oak. The chairmen's seats on the dais are covered with a veneer of very old oak taken some years ago from a London excavation.

The architectural settings to the doorways of the chamber, with their canopies, are of black Belgian marble. Near by, in the northern cross-block, is situated the largest of the many committee rooms, intended primarily for education purposes, and having accommodation for the public and the Press. By means of sliding screens it is divisible into three, as occasion may require. The large central division of this room has a barrel-shaped ceiling, intersected by the groins of the round-arched window heads, and the gallery openings. As with most of the rooms on the members' floor, it is lined with oak panelling, treated in a broad and simple way. The wood carving generally is by Mr. George Alexander, of Chelsea. The flooring throughout the building, apart from the two basement floors, is of oak blocks. Windows are fitted with steel casements.

External Elevation.

The style of the building may be described as of the severe phase of English Renaissance, interpreted in a modern spirit, with a considerable measure of freedom. The external frontages have a granite-faced substructure, above which they are faced with best Whitbed Portland stone, and the internal lighting areas with either white glazed or Arlesey bricks.

The crescent of the river front has been dealt with as the dominating external feature of the building. It consists of the Ionic order embracing four storeys, columns over 40 feet in height, and bold, sweeping, horizontal lines. The connecting chord across its terminating pavilions encloses the members' terrace, raised well above, and disconnected from the new embankment road passing in front of it, and a few feet lower than the principal or members' floor itself. At or adjacent to the northern end of the crescent are the members' refreshment rooms—at its southern end the reading room and library, with access from and to the terrace in both cases. Within the curve of the crescent block are contained the private rooms of the chairman and vice and deputy-chairmen of the Council, and the party whips, conveniently near to the council chamber. The view from the river front looking out over the water and the traffic of Westminster Bridge towards Whitehall, the Houses of Parliament, and the Abbey, commands a picture of one of the most beautiful and interesting aspects of London life. The height of the main floor of the building is 16 feet, while the office floors have an average height of 11 feet 6 inches to 12 feet, floor to floor.

The rectangular members' courtyard and its approach from Westminster Bridge front have already been referred to. The heavily treated, stone vaulted carriage way, with its granite base, has been ren-

dered as one of the very important features of the building. Entering it from the public roadway, the vista terminates in the members' entrance doorway, finished with a semi-circular arched head, and flanked on either side by pedestals with bronze lamps. The façades of the four blocks of building giving on to the courtyard are treated similarly to the external fronts—Portland stone facings on a granite substructure, and steep-pitched roof with two stages of dormer windows.

Roof.

While on this aspect of the building, attention may be drawn to a treatment of roof unusual in this country, the prominence of which is emphasised by the Italian roofing tiles, of rich red colour. The dormer windows are lined with sheet copper, as is also the fleche, the central feature of the crescent roof. The height of the main cornice of the building is, roughly, 90 feet above the foundation, the ridge of roof 130 feet, and the top of the fleche 190 feet. The structure embraces nine storeys, the two lowermost being the basement and sub-basement, devoted more particularly to storage purposes. Exclusive of these, and with the further exception of the first floor allotted to members and heads of departments, practically the whole of the building is required for the accommodation of the Council's office staff. The rooms for the latter are treated in a severely simple way, and, indeed, extraneous or unnecessary ornament is generally avoided in the treatment of the building.

The medical officer's department includes laboratories for various uses, and rooms for the medical examination of school children. Luncheon rooms for the Council's staff are provided on the sixth floor of the crescent block, with provision for the catering service and its staff above, and lift connections with the members' floor, basement larders and stores, and with the goods delivery road.

At the extreme north of the building, when it is eventually extended and completed, will be a roadway connecting Belvedere Road with the embankment, thus securing, moreover, a lighting area for the northern front. Off this roadway will be formed the goods delivery and service cartway leading into the internal area of the building adjacent to the boiler house (beneath the large committee room), by which means coal and other fuel will be delivered and the general supply of materials and stores maintained.

The figure sculpture in Portland stone and bronze, above the heads of the pavilion windows of the principal floor, is the work of Mr. Ernest Cole; and Mr. C. H. Mabey, of Vauxhall, is responsible for the architectural carving in stone.

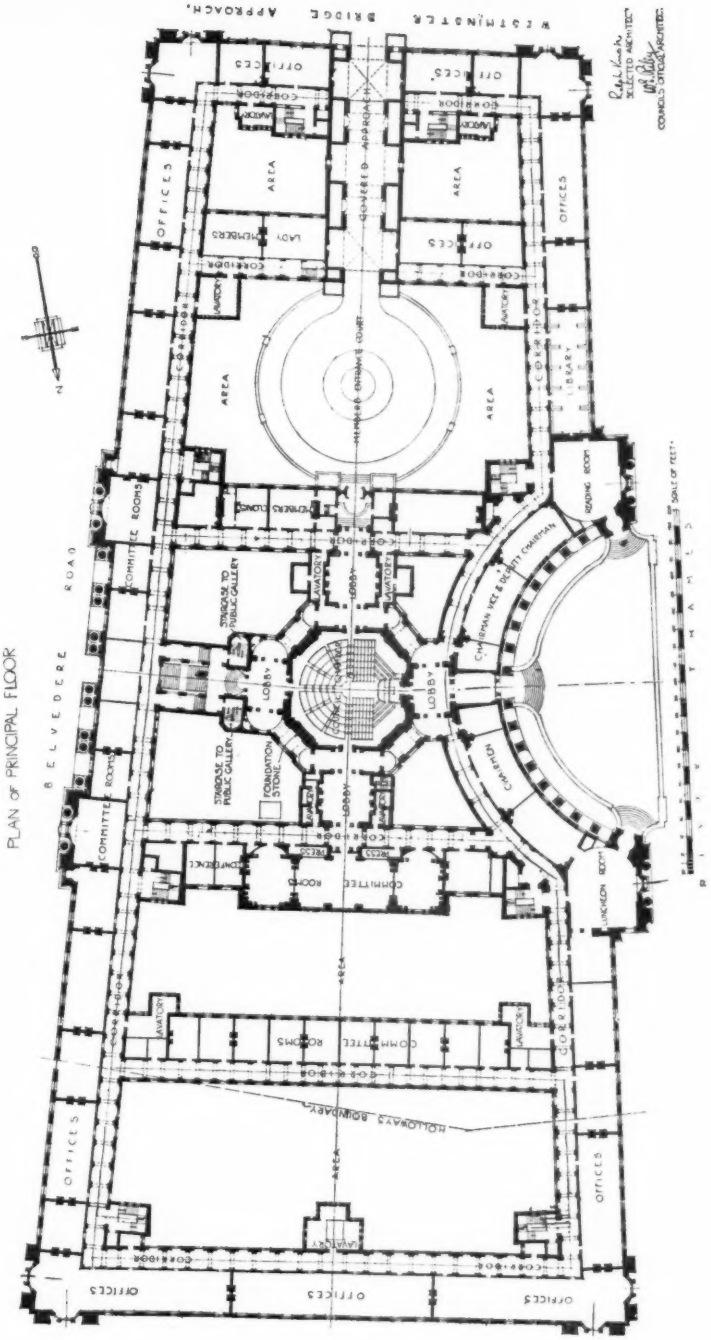
INTERESTING FACTS AND FIGURES RELATING TO THE HEATING AND VENTILATION OF THE COUNTY HALL.

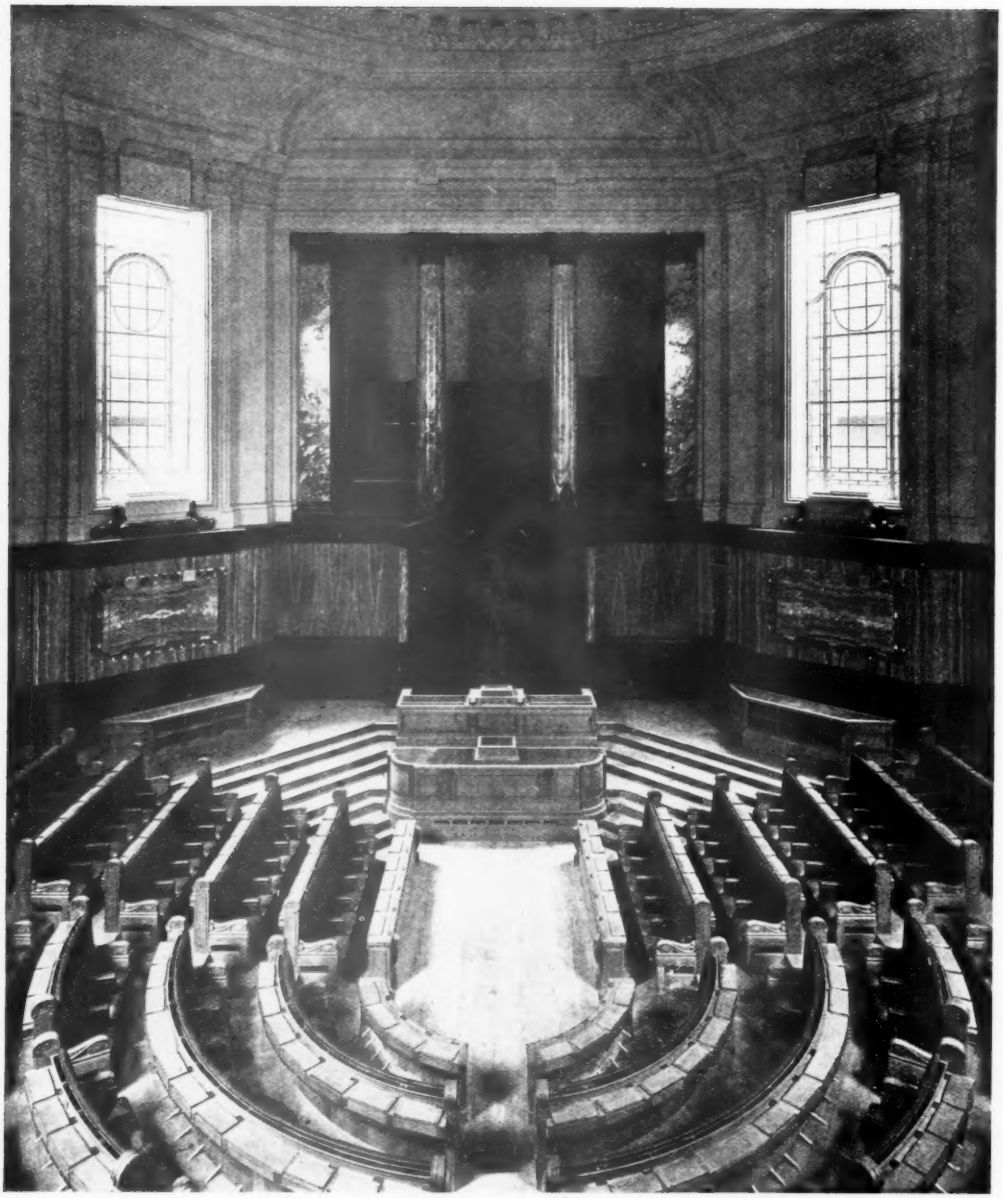
Heating System.

The question of the best system for heating the building generally was fully investigated by the architects over twelve years ago, with the result that a circulation of hot water through radiators was decided upon. The labour involved in the use of open fires for a building of such magnitude prohibited their general adoption, and only in exceptional cases have fires been permitted. The principal factors which led to a decision in favour of hot water rather than steam radiation were the comparatively low temperature of the radiating surfaces and the extreme flexibility of the system, permitting as it does of the heating medium being varied in temperature from 100° F. to 180° F., as required, to meet the outdoor conditions. Hot water radiators will therefore be found in nearly every room, and, wherever practicable, they are provided with a fresh air inlet of special design. Unlike most so-called fresh air inlets, these can be readily cleaned and can be controlled by the occupants of the rooms, who can see at a glance whether the inlets are open or shut.

Method of Circulating Water.

Having decided upon the medium of heating, and having fixed upon a central position for the boiler house, consideration was given to various methods of ensuring that the heat was equally distributed throughout all radiators. Natural circulation by gravity being out of the question, a central pumping plant has been installed. Two electrically driven pumps capable of performing the whole duty have been provided, and there are two similar pumps driven by steam engines. The latter can be used when a failure in the supply of current occurs or when the exhaust steam can be economically used for heating the water supplied to lavatories. The water, when discharged from the pumps, which may be termed the heart of the system,


WESTMINSTER BRIDGE APPROACH
OFFICES
AREA
LADY MEMBERS
COMMITTEE ROOMS
MEMBERS' ENTRANCE COURT
LIBRARY
READING ROOM
CHAIRMAN
SECRETARY
LOBBY
STRIDOR TO PUBLIC GALLERY
FOUNDATION STONE
COMMITTEE ROOMS
LUNCHEON ROOM
HOLLOWAYS BOUNDARY
BELVEDERE ROAD
PLAN OF PRINCIPAL FLOOR
SCALE OF FEET



THE COUNCIL CHAMBER (UNFINISHED)

passes through the boilers, where its temperature is raised, and thence to a flow header 12 inches in diameter, which, to continue the analogy, we may call the " aorta." The flow header distributes the water to trunk mains, or arteries, leading to each of seven control chambers, where a further subdivision takes place. From each control chamber smaller pipes are carried round the adjacent section of the building, and from these the smallest pipes, or risers, are taken to the top of the building, with connections to radiators on each floor. If we regard the radiators as capillaries and the drop pipes and return circulation pipes as veins, the analogy will be complete. Every radiator thus receives its supply of hot water undiluted, and hence the heat distribution is as nearly perfect as could be expected. The difference in temperature between the main flow header at the boilers and the return header at the pumps is found to be only about 20° F., which was the figure allowed for.

Other Methods of Heating.

Certain portions of the building are being heated by other methods, as follows :—

A few rooms requiring heat at the seventh floor are above the tanks, and are therefore being heated by steam radiators.

The sub-basement stores and strong rooms, which are below the level of the surrounding streets, are to be kept warm and dry by the circulation of air drawn in by three fans and passed over heating batteries to a system of distributing ducts.

The council chamber and education committee-room are dealt with specially, as described later.

Boiler House Plant.

In the boiler house will be found a battery of six boilers of marine multi-tubular type, specially designed by the Council's chief engineer, and manufactured by Messrs. Davey, Paxman and Co., Ltd. Four of the boilers are used as hot water boilers, and together are capable of generating from 20,000,000 to 28,000,000 British thermal units per hour, according to the rate of firing. The remaining two boilers work as steam boilers at a working pressure of 60 lbs. per square inch. The duty of the steam boilers comprises the supply of steam for cooking, for use in the calorifiers which supply hot water to lavatories and serveries, for the sub-basement air heaters, and for the council chamber air-conditioning plant.

Hot-Water Services.

The hot-water service to basins and taps throughout the building is provided by two storage calorifiers adjacent to the boilers, each with a storage capacity of 1,500 gallons and a duty of raising 1,200 gallons per hour to 160° F. Circulation is secured by pumps similar to those used for heating. Except during the rush hour, it has been found practicable to heat the whole of this water by exhaust steam from the pumping sets.

All water used for the boilers and hot-water services is treated with lime in a water softener capable of dealing automatically with 1,000 gallons per hour, and in order to meet intermittent heavy demands, a 7,000 gallon reserve storage tank for softened water has been provided.

Ventilation.

Before describing the special installation for dealing with the council chamber, it may be desirable to touch upon the ventilating arrangements in the main portion of the building. In most of the rooms extract gratings will be found near the ceiling on the side adjacent to the corridor. These gratings permit of the passage of air to ducts formed above the false ceilings of the corridors. These ducts are connected to vertical air shafts, of which there are ten, and effective natural ventilation will take place up these vertical shafts. Each shaft is, however, connected with a centrifugal fan, and when the conditions require it, mechanical extraction can be secured by intermittent running of the fans. The lavatories are provided with independent air ducts and fans, which are designed to secure an increased rate of interchange of air, so that air movement will take place from the building into lavatories. No restrictions with regard to the opening of windows are being imposed.

The Council Chamber Apparatus.

The installation for heating and ventilating the council chamber is one of the most interesting features in the building. A careful investigation was made with a view to ascertaining the causes of complaints which have arisen in connection with buildings such as the House of Commons and the Central Criminal Court. As a result, the opinion was formed that satisfactory conditions could be expected if the scheme embodied the following leading features :—

(*a*) A suitable position for the fresh air intake at a level below the smoke zone, but not low enough to be affected by dust and refuse from the streets.

(*b*) A means of maintaining a suitable standard of humidity and temperature.

(*c*) A means of maintaining a suitable temperature without overheating the incoming air.

(*d*) The adoption of a slow upward current of air in the chamber.

(*e*) An even distribution of the incoming air over the whole area of the chamber and at a low velocity.

(*f*) The extraction of a small proportion of air near the floor level for the purpose of preventing dust and impurities rising from the floor.

A brief description will show how far the scheme has incorporated these features.

The air intake is situated at the fifth floor level, two of the circular windows on the river front having been used, with an alternative inlet from an internal area. The air passes down a vertical shaft of glazed brick to the air conditioning room where it meets a dense water spray issuing in a finely divided state from two banks of nozzles. This spray is maintained by a centrifugal pump producing any desired pressure up to 40 lb. per square inch. At this stage the first automatic control comes into action, in the form of a thermostat which can be set to maintain a constant temperature of the air leaving the humidifier by controlling the temperature of the spray water. This thermostat, by deciding the saturation temperature or dew-point, decides what the relative humidity will be at the temperature in the Council Chamber. As an illustration, assuming that the thermostat is set for saturation at 50° F., the relative humidity in the Council Chamber with a temperature 65° F. will be about 60 per cent. A key is provided to enable the thermostat to be set for other dew-points when required. The spray water can be warmed by mixing with steam or cooled by circulating through an ice tank, both of these operations being controlled by the thermostat. On leaving the humidifier, the air passes through "zig-zag" washing plates, where dust or water in suspension is eliminated, and then meets the heating batteries, the temperature of which is controlled partly by the thermostat in the council chamber and partly by maximum and minimum thermostats fixed in the main trunking. These all exercise control by passing compressed air when required to close the steam valves. The maximum and minimum thermostats ensure that no air is heated above a fixed temperature, even when the council chamber instrument calls for heat, and that no air can enter the chamber below a comfortable minimum when cooling is required. In other words, they control the rate of warming or cooling of the council chamber. The centrifugal fan supplying the chamber is capable of dealing with 20,000 cubic feet of air per minute.

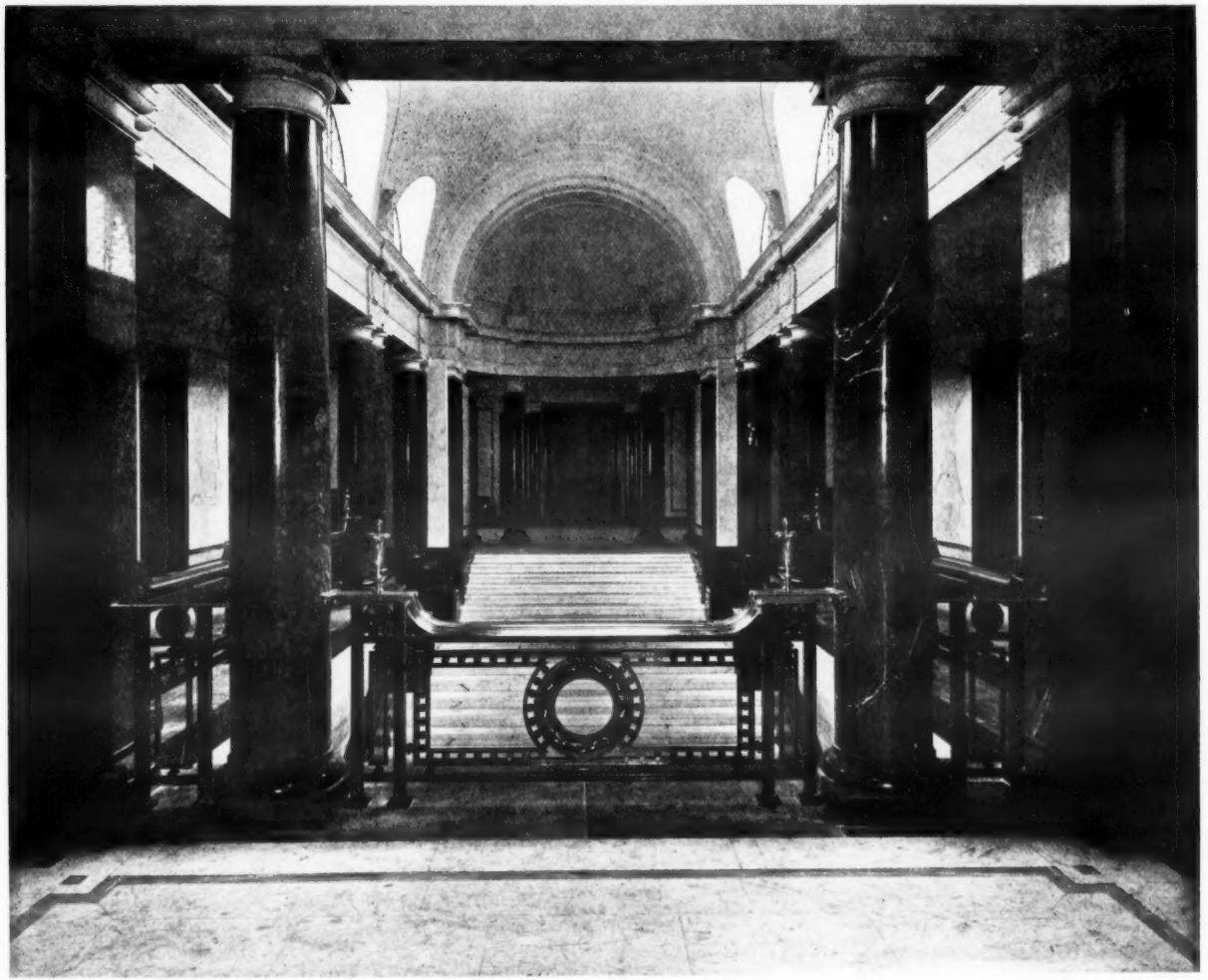
Below the council chamber will be found a somewhat intricate system of galvanised iron trunking, with many branches leading to the inlet gratings and other branches for the purpose of floor level extraction, which is effected by a separate fan. A novel form of individual control will be found in the council chamber, where members by operating a knob can either direct the air currents towards their own seats or vertically upwards through the back of the seat immediately in front of them.

The main extraction fan for the council chamber operates upon the ring of openings which will be seen in the ceiling. After setting the thermostats for various temperatures, it has been found that a temperature of 65° F., with a relative humidity of about 60 per cent., has been most acceptable to the members.

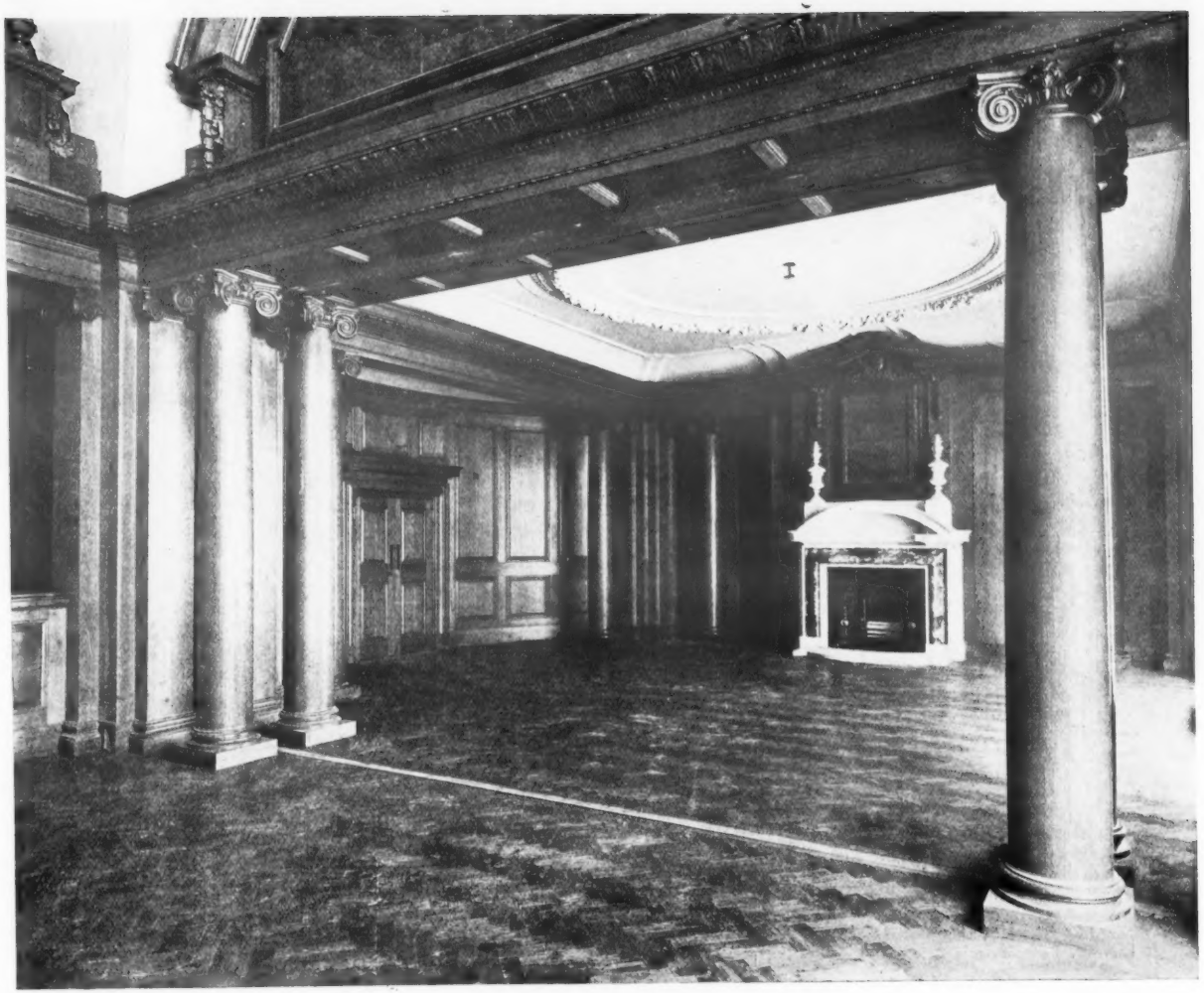
In conclusion, a few figures may be of interest.

Total number of radiators and coils	2,150
Number of valves about	6,000
Approximate length of piping miles	30
Quantity of water circulated to radiators per hour with two pumps running gallons	96,000
Estimated consumption of Welsh steam coal per annum tons	2,500
Specified temperature in offices	60° F.
Specified temperature in corridors	55° F.
Average number of changes of air per hour in offices with the fans running	3
Quantity of air supplied to each occupant of the council chamber (including galleries) with the fans at slow speed cubic feet per hour	3,000
Maximum velocity of incoming air at the gratings in council chamber feet per second	2

The sub-contractors for the main heating and ventilating installations are Messrs. J. Jeffreys and Co., Ltd., associated with Messrs. Richard Crittall and Co., Ltd., Messrs. G. N. Haden and Sons, Ltd., and Messrs. F. A. Norris and Dutton, Ltd.; and for the heating and ventilating installation dealing with the council chamber, Messrs. The Buffalo Forge Co., Ltd.



THE CEREMONIAL STAIRCASE, LOOKING TOWARDS THE COUNCIL CHAMBER



LARGE COMMITTEE ROOM

Discussion

THE PRESIDENT, MR. PAUL WATERHOUSE, M.A., IN THE CHAIR.

The PRESIDENT: You will agree with me that Mr. Riley in reading an interesting Paper has exercised some self-restraint in showing the very necessary prose side of this great building. I confess that to many of us this must have been a useful restraint, because for my own part I have been apt to look upon the building in a more poetic light.

Mr. RALPH KNOTT [*F.*], who was received with prolonged applause, said: I do not think there is anything left for me to say. I should, however, like to say that I have had the very valuable support of Mr. Riley all through the long and arduous work, and of my own partner, Mr. Collins, who is here to-night. I thank you for listening so attentively to the paper.

Mr. F. R. ANDERTON (Chairman, London County Council), in proposing a vote of thanks, said: I must first express my regret that the person who ought really to have moved the vote of thanks is not able to be here to-night. I refer to the President of the Royal Academy, Sir Aston Webb. The regret you will share with me will be all the greater when I have to tell you what possibly some of you may know already, that the reason of his absence is illness in his family.

May I now say what great pleasure it gives me to be here to-night and to have the honour of proposing a vote of thanks to Mr. Knott and Mr. Riley for their extemely interesting Paper. I suppose there is some fitness in my being selected because, after all, I have had the proud privilege of being the first Chairman to preside over a meeting of the Council in the new County Hall, the honour of having sat and attempted to fill that magnificent chair which you have seen on the screen, and of having manipulated with some success the wonderful arrangement for controlling the heating of the room. I can assure you the results are as surprising as they are beneficial. I think all Londoners are proud of their new County Hall. We all of us owe a deep debt of gratitude to the man who designed it and to the men who have carried out the work.

I have taken a good many people over the building, and invited them to admire its many beauties, and have heard but few complaints. There are hypercritical people who will criticise anything, no doubt possibly with a view to showing their superior intelligence. Take it for all in all, London is more than satisfied with its new building. Something has been said and written in the Press about one feature of the Council Chamber—the acoustic properties. It is a strange thing, but I think most buildings, when people first use them, have their acoustic properties criticised. Certainly it was the case on a previous occasion when the London County Council moved into a new building that some members could not hear each other. When the London County Council first started, the Corporation of London gave them the use of the old Council Chamber in the Guildhall. It is on record and in print that at an early meeting in that building a cultured Councillor said to a Councillor sitting next to him, who for the moment I must assume was less cultured, that the acoustic properties of the hall did not seem to be particularly good, whereupon the less cultured person replied, " Indeed, sir, I cannot say that as yet I have noticed anything offensive." I have not invented that story for the purpose of defending Mr. Knott's Council Chamber. Anybody can read that story in the *Recollections* of Mr. G. W. E. Russell, whom I strongly suspect of having been the cultured Councillor in question.

I have said something about people being hypercritical. You may be surprised to hear that it has come to my ears that certain members of the present Council miss the old building, and the extraordinary epithet they apply to the surroundings of the old building is that the new building is not so " homely " as the old building. All I can say, gentlemen, if that is true, if it be the fact that certain members have complained, those members must have exceedingly uncomfortable homes! Apart from that, however, it is really amazing that there should be people who cannot feel the joy of living and moving and having their being in this beautiful building which has been designed and built for London. I have heard complaints from certain people that if its architectural proportions are grand the distances are great, and that officers, when they are summoned to a committee, have to walk along a great extent of corridor. But it is fitting that those who govern London's four and a half millions and look after their comforts should be suitably housed, and I contend that there is no space wasted, no unnecessary expense, nothing that is unworthy of London, or less than London deserves, in this great County Hall.

It has been a great pleasure to me to be here to-night for another reason. I have listened to so many technical terms that I feel the next time I have the pleasure of taking anybody round the Council Chamber and the County Hall I shall perhaps be able to do greater justice not only to its architectural and æsthetic beauties but to the practical services which it performs for London.

In conclusion, I have only to say that I want to express, as well as I can, although I feel I have done it inadequately, my deep sense of gratitude to Mr. Knott and Mr. Riley for what they have done for London; and on this particular occasion to thank them for the admirable paper which Mr. Riley has read to us.

Mr. ANDREW T. TAYLOR (Alderman, London County Council), in seconding the vote of thanks, said: I should like to take this opportunity, on behalf of the

London County Council, of thanking Mr. Knott and Mr. Riley for the work they have done for us. Mr. Knott has been extremely modest in his Paper to-night. He has said nothing about himself or about Mr. Riley. As with Sir Christopher Wren, you have to look around if you wish to see their monument. I think the new County Hall has been a great triumph for unlimited competition. It is a debatable point whether unlimited or limited competitions are the best, but here is an example in which unlimited competition has brought out a young man who had never previously built a large building, and who has suddenly come to the front with one of the greatest buildings erected in London for a century. It reminds one of the great competition for Sir Walter Scott's monument when a working mason came out first. I refer to Kent, who produced a monument surpassed by nothing, either ancient or modern. It also reminds one of a famous competition in olden times for the celebrated dome of the Cathedral at Florence, when Brunelleschi won the competition. As he was a young man the authorities were not sure whether they could trust him with so great a work, and saddled him with Ghiberti. They did their work very well together, but you will remember that Brunelleschi feigned illness and refused to see anyone. When the workmen went to Ghiberti for the necessary instructions they found him unable to give them. Still Brunelleschi remained in seclusion, and did not appear again until it had been decided that Ghiberti's co-operation was no longer necessary.

I have not heard that Mr. Knott has taken such drastic action with regard to Mr. Riley. I understand, on the contrary, that they have worked together in the most perfect harmony, that they have been mutually helpful to each other, and I am extremely glad that this relationship has been maintained.

In the New County Hall we have a building which, I think you will agree, is extremely suited for civic municipal architecture. It has nothing in common with the great Hôtels des Villes and other buildings on the Continent. I do not think it has derived any inspiration from those old buildings. You remember the Hôtel de Ville at Paris with its magnificent Salle de Peintre and other magnificent chambers. We have not attempted anything of that kind. I do not think it can be said that we have wasted the ratepayers' money on unnecessary or superfluous ornament. The hall is intensely utilitarian and yet it has that beauty which comes from simplicity and perfect usefulness. One is reminded in some respects, when one sees the massiveness of the building, of Blenheim and of that famous epitaph of Dr. Evans on Sir John Vanbrugh :

" Lie heavy on him, earth ! for he
Laid many heavy loads on thee."

I am afraid that will be an epitaph for Mr. Knott. We have a great national inspiration and strength in this building. It will last for hundreds of years. I desire, without saying anything further, to thank both Mr. Knott and Mr. Riley for their paper, and to say we are perfectly satisfied with the splendid building. We think that London should be satisfied, too, and trust that it will be an incentive to us to administer the services of London with greater assiduity and care than before.

The PRESIDENT : There can be no doubt as to the admiration which we all feel for the building which has been described, and no doubt as to our gratitude for the Paper in which it has been described. I therefore think I should be interpreting your wishes if I proceed at once to put the vote of thanks.

Mr. W. E. RILEY [*F.*], in returning thanks, said : The monotony of my voice must by this time have come home to you. You have had a good solid hour of it, in any case, and I feel a little jaded. But I may tell you what the object of this Paper has been. If you look back in the architectural records of the Royal Institute you will find no really useful account of the building of the Houses of Parliament or even a very useful and lucid account of the building of the Law Courts. It was intended that this Paper should put on record—that is the reason you had a good deal of detail which you probably did not want—the true history and meaning of this gigantic building. I hope that when you come to read it in future in the JOURNAL you will bear that in mind and give the credit of what interest it possesses to that view which has been taken of the case.

Mr. BERESFORD PITE [*F.*] : Will you forgive a remark ? I think it is fitting that on this occasion the Institute should express their congratulations to the London County Council upon achieving such an important and momentous work. The inspiration to remove their building to the other side of the river and establish a precedent there is one which carried unanimity of approval and consent among architects. Glad as we are to congratulate our confrères on their successful conduct of so difficult and knotty a job, the whole profession will feel that we ought to express to the London County Council our appreciation of their courage and their success in providing London with a monumental civic building.

The PRESIDENT : . . . I shall have great pleasure in putting the motion from the Chair, in which case no seconder will be required.

The motion was carried.

Decorative Art at Burlington House

BY HENRY M. FLETCHER [*F.*].

WE are still a stout-hearted race. Nine hundred and forty-eight separate exhibits, many of them show-cases containing twenty and thirty objects apiece. Is it fair to this great body of workers that we should skip through the results of several years' work in an afternoon? Or is it fair to us that we should be expected to digest this Gargantuan feast in two or three visits? Three minutes' contemplation of each object would fill a working week of forty-eight hours. Must we still suffer exhibitions on this scale? One of these rooms would hold as much delight as you can appreciate on a single visit; thirteen are more than the most ardent spirit can bear without satiety. When shall we learn to prize quality above quantity, to see that two exhibitions every year, with a hundred things in each, are better and pleasanter and make for more continuous progress than one of a thousand things every five years? But we still need to be summoned by drum and trumpet; our meals are simplified and civilised, but our art we like to swallow *en masse*, to gorge like the boa constrictor and then dismiss it from our thoughts.

One comfort we may take from this exhibition—that there is a great and perhaps increasing number of men and women in England to whom civilisation means something more than machinery, who are not content with the mechanical reproduction of trivial sights and sounds by cinema and broadcasting, the mechanical hurry of the motor-car, who are driven to produce things for the delight of themselves and their fellow-man by skill of brain and eye and hand. It is all to the good that the multitudes of machine-worshippers should have the chance, whether they take it or no, to realize what civilization is, and thanks are due to the Royal Academy and its architect-president for laying it before them.

The movement set going by Morris and the founders of the Arts and Crafts Society has spread far and wide. Painters have come under its influence, and see that to be a picture is not the be-all and end-all of every picture. We may go further, and say that a painting is not decorative merely because it is conceived and executed in a certain manner. The very word "decorative" implies the act of decoration, and how can such act take place unless there is something—some place, some wall, some room—to decorate? At every turn in this exhibition one feels the heightened value of work which has been carried out to fill a definite place, and how, where a key photograph has been added, as in Mr. Clausen's beautiful scheme for the Hall at High Royd, the intention of the designer becomes clear and things are made plain which no mere study of cartoons would illuminate. The conclusion is evident—that for the development of any sound tradition constant practice in concrete surroundings is needed. The impulse is here, has arisen spontaneously among painters, and is therefore not artificial but vital. At present it is tentative, and will die if it be not fostered. Eighty years have passed since the last impulse was given by the decoration of the Houses of Parliament; if we let slip this opportunity another eighty may pass with nothing done. It is for architects and all who build to see that, so far as they have the chance, they help the painters to bring to fruition the germ that may one day grow into a great and noble art.

Not that all is tentative in the collection. There is a room full of Alfred Stevens's incomparable cartoons to set a standard, and to illustrate by way of warning the waste of genius that came to pass in the eighty desert years. There is actual achievement in Mr. Clausen's work already mentioned, as nobly felt and as finely decorative as anything carried out in our own day, and there is potential achievement on a sumptuous scale in Mr. Sims's "Crafts," with its difficult foreshortenings tackled for the sheer enjoyment of the problem. Before Mr. Goetze's Decoration for a new Vestry Screen one can only, like Milton's stars, with deep amaze stand fixed in steadfast gaze.

The experiments in true fresco are particularly interesting, and, considering that examples of this medium have survived in churches from mediæval times, one may hope that the experimenters will go on and prove once more that rightly handled it will overcome the drawbacks of our climate. It is disturbing to notice that most of them have cracked; but, after all, fresco is not naturally mobile, and one of the largest—Mr. Ernest Jackson's "Eve," a delightful study in cool tone—is intact.

In the Arts and Crafts section, as indeed in one's travels through town parishes and country villages, the first thought that comes to the mind is one of thankfulness that the widespread revival of fine lettering preceded, if only by a year or two, rather than followed the pressing need for its use occasioned by the war. The honour rests with such pioneers as Edward Johnston, Graily Hewitt and Eric Gill, but their influence, making for fine form and legibility, has permeated everywhere and saved us from a thousandfold greater disaster than the lettering on the memorials of the Boer War. Mr. Graily Hewitt's Rolls of Honour for Eton and the R.A.M.C. are only two of the best among many where choice is difficult.

One looks in each craft for some freshness of idea or treatment, some development along traditional lines,

but also out of traditional lines, into modern expression. We find it in lettering. We find it in furniture and cabinet-making, where, although Ernest Gimson's work remains unsurpassed, it is being carried on by Mr. Heal, with his sideboard and bookcase, Sir Robert Lorimer, with the combination, perhaps not wholly brought into harmony, of flat carving with the structural forms of Queen Anne's time, Mr. Laurence Turner, Mr. Armitage and others. Where we miss it is in stained glass. When other crafts have in the main freed themselves from archæology, why must this, one of the loveliest, remain so obstinately tied to mediæval forms? Mediæval methods are probably so well suited to the material that they cannot be departed from without risk, but that is no argument for sticking like limpets to mediæval subjects, costumes and architecture. If Mr. Walter Bayes can translate a rolling-mill or a steam-hammer into a mural decoration, could not Miss Gwynedd Hudson have found an inspiration for her otherwise charming hunting scenes in a meet of the Quorn?

In sculpture and carving there is freshness in Mrs. Stabler's charming stone and cement figures, in Mr. Stabler's bold leaden eagle and St. George in glazed faience. Mrs. Jenkin's stone "Labourers in the Vineyard," cut with square edges in the Assyrian manner, and "Swamp Girl" show great skill in modelling with hardly perceptible relief, and Mr. Gilbert Bayes's screen panels of wood, pierced and coloured, hold promise of further development. Mrs. Clay's little choir-stall musicians and Mr. Simmonds' squab and humorous duck and drake have a life in them that puts to shame many of the larger works of larger names.

Other things that should not be missed are Mr. Paul Cooper's beautiful shagreen and silver boxes, and Mrs. Christie's admirable needlework.

R.I.B.A. PUBLIC LECTURES.

Arrangements have again been made this year for holding a series of Public Lectures in the Large Gallery of the Institute.

The Lectures will be given in the afternoons on the following dates:—

Feb. 22. Sir Ryland Adkins (subject to be announced later).

March 1. Mr. J. A. Gotch. "A Note on the Life of Sir Christopher Wren."

March 8. Mr. Walter Bayes, A.R.W.S. "Architecture and Painting."

March 15. Mr. H. S. Goodhart-Rendel. "Architecture—a Necessity or a Luxury?"

March 21. Lord Sumner. "Architecture and the Public."

Mediæval Wall Paintings

BY A. R. POWYS [*A.*].

The recent correspondence in the *Times* on this subject gives me the opportunity to restate two facts about the discovery and protection of wall paintings which are still often overlooked by those who are concerned with them.

First as to their discovery: Wherever mediæval plaster remains in a building it is likely that wall paintings exist. Such plaster was commonly laid on roughly with an uneven surface which catches the dust readily, has often undergone much patching, and is apt to look untidy in these days. Often parts of the wall have been subjected to many years of damp, penetrating from leaky gutters, eaves shootings, or down-pipes. Usually successive coats of limewash, each, it may be, decorated with pictures or texts according to the custom of the time, were applied as every preceding coat became defective through scaling, or because of some structural alteration. The first precaution to be remembered when dealing with such plastered surfaces, however shabby they have now become, is that replastering and removal of plaster should not be ordered until a careful examination has been made, and absolute certainty is reached that there are no traces of paintings either on the plain surfaces or in the window jambs. In itself also, the removal of mediæval plaster is indefensible. The second precaution is that no uncovering of wall paintings should be undertaken until all sources for the penetration of damp have been removed. This obvious piece of common sense is too often neglected, and is the cause of the loss of paintings. The uncovering of wall paintings should not be undertaken unless or until the building in which they are is structurally sound throughout.

When a wall has received successive layers of decorative treatment it is seldom possible to recover any but the original one laid on the plaster itself; for each successive picture or pattern is painted on a wash which does not adhere to that below as firmly as the original painting to the original plaster.

Thus at Little Hampden in Buckinghamshire, there were on the north wall three successive St. Christophers, and thereupon both black letter and roman texts. Each painting subsequent to the first, which was, if I remember right, of the twelfth century, had been re-done, because that which preceded it had scaled, and so become patchy. And each successive painting was not only liable to failure owing to its own scaling, but also to that of those on which it was laid. Thus it was found possible only to preserve the remnants of the first picture, which had been damaged by the structural alterations which the walls had undergone.

When uncovering is being done it may be well sometimes to begin with a few feet of some less valuable part, and treat that alone, after taking the best advice, in order to make actual test of the method proposed, rather than to do the whole work at once. When the subject of a wall painting is known, or when enough evidence exists to lead to a fair certainty on that point, study should be made of the contemporary drawings of the same subject, as this will give useful indication of what to expect. Again, it is desirable when a painting is being uncovered to remove the thickest of the limewash from the whole area to be treated, so that an idea of the arrangement of the whole work may be known before close attention is given to it.

Much might be written about the tools to be used in removing limewash, about the use of glass to keep people from rubbing against the lower parts of these pictures, and about the best sources of information for the study of the subject, but enough has been indicated here.

It is desirable that a camera should always be at hand with which to photograph each stage of the uncovering. In addition to photographs, full-size coloured records should always be made.

Secondly, as to preserving the paintings. This is a matter on which more mistakes are made than on any other connected with the subject. It should be remembered that there is no sovereign preservative suitable to all cases alike, that varnishes and sizes are often harmful,* that it is very much better to apply no preservative than the wrong one, that whenever a preservative is under consideration its possibilities of harming the picture should be studied fully, and until it is certain that it has none it should not be used. It is not sufficient that it should make the painting more brilliant, or dustproof, or proof against damp. It is desirable to do these things, but with these qualities most preservatives carry others that cause serious injury. Knowledge on the subject of preservation is comparatively small, though each year shows an increase in it. Paintings do not suffer any hurt by being left beneath a layer of limewash. I would therefore advise those who have the care of them to proceed with self-restraint.

I think I am right in saying that attempts to repaint these pictures will never again be made. For the fact that this phase is past, we should be thankful to the work of those men, which was at the same time the product and cause of that wave of feeling which has brought about so great and good a change in our attitude toward " Restoration."

* I would refer the reader to a letter by Mr. Noël Heaton which appeared in the *Times* of 11 January 1923.

Tints and Towns

A PLEA FOR COLOUR IN CITY LIFE.

By RT. HON. J. R. CLYNES, M.P.

When St. John saw the New Jerusalem coming down out of heaven, he saw it in colour ; the jeweller as well as the architect and the mason had been concerned in its building. Each of the gems which formed the foundations of its twelve walls represented a specific tint, from the reddish brown of the sardius and green of the chrysolite to the yellow of the topaz and the deep azure of the amethyst.

Outside the limits of the glowing Orient, cities in whose decorative scheme colour takes a definite place are rarely encountered. Two exceptions will jump to the traveller's mind—Venice, with the greens and blues and scarlets of her jalousies and the pale pink of her palazzi ; and Moscow, which has, I am told, a dazzling kaleidoscope of roofs in red and brown, blue and green, broken by sapphire and emerald and gold cupolas and gleaming white minarets—beauties, by the way, that I am not likely to be invited to view.

The English town of Tudor times must have presented a gay and vari-coloured aspect. The weathered red tiles, timbered fronts, and painted escutcheons and shop signs gave to the narrow, cobbled thoroughfares a many-tinted background. It was only with the arrival of the industrial revolution and crude utilitarianism of the nineteenth century that the love of colour was crushed out of the British people and our large centres of population became the leaden-hued and depressing huddle of sombre buildings we know too well.

Hints of a reaction against the grim domination of stone and stucco and dingy brick are happily beginning to appear. Here and there an oasis of ivory white terra cotta or tinted vitreous brick breaks the monotonous line of smoke-begrimed buildings. In some of the newer erections decorative designs in coloured wall-facings introduce livelier hues and suggest possibilities of varying and brightening the scenes of our daily toil.

As yet, however, little has been achieved in the direction of formulating definite colour schemes in town planning or improvement. With the ingrained national distrust of the bolder use of colour, British architects and builders are slow to realise the remarkable diversity in decorative possibilities which modern processes for the production of ceramics have placed in their hands.

A skilful gardener plans his herbaceous borders with the deliberate design of producing at different seasons certain pleasing combinations of colour. Why should not the architect, who is called upon to prepare plans for the erection of large blocks of buildings or to lay out a new residential area, take a leaf out of the gardener's book, and set himself to combine with stately and harmonious proportions a colour scheme that will enhance

the beauty of his work ? One can imagine a combination of greys and yellows, browns and greens, blues and whites, or even gradations and shades of a single colour, in the façades of a thoroughfare, that would perceptibly mitigate the dreariness and depression which we have mistakenly come to believe to be inseparable from the grey skies of our island home.

Scientists and medical experts more and more emphasise the curative and health-giving properties of sunlight. Unfortunately in these northern latitudes an adequate supply of sunshine cannot be turned on at our will. But its absence may be in some degree counterbalanced by utilising every opportunity to bring into play the next best thing—those colours which delight the eye and subconsciously infuse man's being with lightness of heart and gaiety of spirit.

No inconsiderable part of the depression and listlessness which characterise the life of the workers under the monotonous conditions of modern industrialism may be traced to the drabness and absence of light and shade in their environment.

If our streets and buildings presented to the citizen's eye the variety and beauty which spring from æsthetic employment of harmonious colouring, the whole tone of our industrial population would be beneficially affected. A light-hearted and cheery temper would be stimulated, which would not merely lighten the burden of the daily task and eliminate a good deal of the friction, but insensibly educate eye and brain, and restore to our people some measure of that artistic perception of which they were robbed a hundred years ago by the crudities of the industrial revolution.

The Architecture Club

EXHIBITION OF PHOTOGRAPHS AND MODELS.

One of the most important activities of the Architecture Club for the present year will be an exhibition of modern English architecture entitled " Twenty Years of British Architecture." The Duke of Westminster has kindly lent Grosvenor House for the purpose, and the exhibition will be open to the public from March 6 to 24 inclusive.

The exhibits will consist of photographs (of a large size) and models of executed works, as it is felt that these will more correctly present the true character of the buildings than drawings or diagrams, and will appeal more widely to the public. A somewhat novel feature will be the projection on a large scale of photographs of buildings by means of lantern slides in the Great Gallery of Grosvenor House. It is also hoped that it will be possible to arrange a series of public lectures on architectural subjects.

An interesting exhibit will be a collection of models, from numerous historic examples, illustrating the development of the British house from the earliest times to the present day.

The Committee of the Architecture Club feel that while there are numerous exhibitions of painting and sculpture, comparatively little attention has been given to architecture, and that the recognition of architecture as a fine art has, in consequence, been limited to architects themselves and a small esoteric public. The attempt is, therefore, to place architecture in its right perspective so far as the public appreciation of art is concerned.

Review

ARCHITECTURAL BUILDING CONSTRUCTION. *By Walter R. Jaggard, F.R.I.B.A., and Francis E. Drury, F.I.S.E., M.C.I. In two volumes.*

It is to be feared that most architectural students look at the subject called Building Construction much as youth in general regards bread and butter—or should one in these days say margarine ? That is, as something they are told is good for them, but which they do not find very appetising. If, however, anyone happens to be, unlike the child in *Punch*, that sort of hungry, there are now plenty of dishes of bread and margarine to choose from : for of the making of books on Building Construction there is no end. And for the most part the contents are all sound and wholesome. The ingredients may to a limited extent be variously proportioned ; brickwork being predominant in one, joinery in another, and so on. One may have a stronger flavour of the workshop, and another of the lecture-room or the drawing-office : but beyond that there is not much variety. All are just bread and margarine, and the frivolous will look in vain for jam.

In all such books, in fact, a large part of the matter must be the same : for it must be concerned with the ordinary, everyday construction of ordinary, everyday buildings, of some ninety per cent. or more, that is, of all those erected. And the methods of constructing such buildings, and most of the materials used in them, have long been standardised, and are known to everyone in any way concerned with building : so that nobody can have much that is new to say about them. Even to improve the method of presenting the matter, its arrangement, or the clearness of statement and illustration, is by no means easy. These things have been very well done already. It must, therefore, have required something like the headlong valour of a V.C. to bring out a new book on Building Construction in 1916, in the midst of the war, when we all had other things to think about. But we were all heroes then—or thought we were—and Messrs. Jaggard and Drury did it.

They met the difficulties referred to in more ways than one: but first and foremost by relating a large proportion of the details of construction which they describe and illustrate to certain designs for buildings which, if they would not let at "economic" rents, are well adapted to exhibiting good standard methods, and many of them. The general drawings for these buildings are shown on loose sheets to be spread out before the student as he reads, and at other times folded and kept in pockets in the covers of the volumes. The plan seems an excellent one provided the reader will take the small amount of trouble required to refer to the sheets, and find and study the position of the detail: for it takes the student one step at any rate from theory in the direction of practice, and will probably appeal to him if he happens by chance to be a real seeker for knowledge. Another very attractive feature of these volumes, and one that will appeal to architectural students, is the excellence of the illustrations. Some small part of the credit for their clearness may perhaps be given to the highly glazed paper on which they are printed, but they are in any case beautifully drawn. Many, indeed, are charming examples of pen-work, almost worthy to be compared to the delightful illustrations in Viollet-le-Duc's works—and, if less delicate, more reliable: for that talented Frenchman was accustomed to draw a little on his imagination in the rare cases in which accurate information failed him. There is no sign that Messrs. Jaggard and Drury have done that. If the standard reached by the text is not so uniformly high as that of the illustrations, inasmuch as it occasionally condescends to adopt the style of a specification, it is nevertheless always admirably clear and to the point: and there is not, as a general rule, that undue anxiety to spare words that has marred so many books on the subject from Vitruvius onward. The practice adopted of leading up, by preliminary explanation in successive stages, to technical terms and definitions, instead of the more common one of throwing them at the head of the reader first and explaining afterwards, is especially to be commended. It is probably in part due to this practice that the chapters headed "Structural Design" form an exposition of the mathematics of construction that is very unusually clear and easy to follow.

It is not so certain that the arrangement of the matter is an improvement on previous practice. Brickwork seems to occupy an undue proportion of space, more than twice as much as stonework—the authors, ignoring the modern subdivisions of the trade, call it masonry—and nearly twice as much as joinery, including door and window ironmongery. Steel and iron construction, including such things as metal casements and railings, is fully and admirably dealt with; but there is nothing at all about sanitary plumbing and fittings, water supply, heating and hot-water work, painting and glazing—except patent glazing, artificial lighting, and so on. It must be assumed that these things are included in the "large field of advanced work" which the third volume is to cover: but some of them seem tolerably elementary. The tools of the trades are nowhere mentioned; and materials are only sketchily described; the student being advised to obtain an intimate knowledge of them "by personal examination and experiment." This is excellent advice which should be more systematically followed than it often is: for only so can he learn to distinguish good material from bad, or "prepare himself," in the words of the preface, "to foresee the difficulties of the artisan in realising his conceptions."

These volumes, notwithstanding the correlation of details with general drawings, have a much stronger flavour of the lecture-room than of the workshop or the architect's office; but perhaps that is inevitable, and not unsuited to the modern method of teaching architecture.

FRANK T. BAGGALLAY [*F.*].

Correspondence

CONCILIATION BOARD OF ENQUIRY IN FIRST INSTANCE.

To the Editor, JOURNAL R.I.B.A.,—

SIR,—There is no occasion to enlarge in these pages upon the difficulties incidental to all building case actions at law. They are already manifest to all architects who know well enough what a misfortune it is to be mixed up in disputes with their clients, haggling over personal questions or professional charges. I suppose very few at some time or other have not found themselves thus involved and have suffered accordingly. Bad cases of this character I have met with and advised upon, helping to mitigate trouble as far as might be. My experience in the High Courts of King's Bench, and even before official arbitrators, demonstrates the risks run by litigants on both sides, largely because of the misconceptions often readily arising over technical details which the legal mind cannot grapple with, and also because counsel seem unable to appraise the relative values of conflicting expert evidence.

The object of this preamble is to serve by way of introduction to a proposition that the Royal Institute of British Architects, with the advice of the Practice Committee, should consider the possibility of forming some sort of professional, and in that sense a lay, Conciliation Court of the first instance by consent. I do not contemplate exactly Conciliation Courts such as have been long established by law in Denmark and also are found in both France and Italy in a modified form. My suggestion seems to be covered by the words of St. Paul's question to the Corinthians: "Is it so that there cannot be found among you one wise man who shall be able to decide between his brethren?"

Lord Brougham more than a century ago proposed the formation of such elementary legal courts, and he pointed out " how much money and temper might be saved if, as a condition precedent to litigation, disputants were bound to meet in the presence of a trained and impartial third person holding the dignity of a judicial office who could exhibit to them the pitfalls of litigation and the advantages of a just and peaceful settlement."

The idea of writing to the JOURNAL was suggested to me by reading *What the Judge Thought*, by His Honour Judge E. A. Parry, just published. " The parties in the early stages of the quarrel should be induced to come before a conciliator by themselves unaccompanied by lawyers, and the business done to be confined to exploring the avenues of peace to see if any honourable alternative to litigation can be found. If no conciliation is possible, then the case necessarily will have to proceed." In Norway, by employing such informal preliminary investigations before tribunals of conciliation, 75 per cent. of the cases presented have been disposed of to the satisfaction of both parties, and in Denmark the percentage is given at 90 by Heber Smith.

Abraham Lincoln, a great legal reformer, warmly advocated similar common-sense methods. Judge Parry is of the same mind, but he agrees that English-speaking people move slowly, and, he adds, lawyers and laymen fail to encourage conciliatory courts seriously because such reforms may cut down fees.

The Judge concludes his chapter thus : " Blessed are the Peacemakers."

Are vested interests so hide-bound that nothing can be done ? Must we confess that ? Is the idea too Utopian for practical politics ? Abraham Lincoln advised his pupil friend : " If in your judgment you cannot be an honest lawyer, resolve to be honest without being a lawyer."

Criminal cases, though differing from civil actions, equally concern the frailties of human affairs, and the experience of Sir Richard Wallace, Chairman of the County of London Sessions, goes far to support what is urged by Judge Parry, as above stated. At this year's conference of probation officers in London, Sir Richard said that " out of 100 probationers for years past the average of those who have never returned to criminal life and never come back to prison had been 96." Besides thus saving offenders from sinking down into degradation, " the effect upon the general crime triable at the Sessions has sunk 40 per cent. in London below what it was before the Probation Act came into operation." Properly constituted probation officers capable of persuading people from embarking upon litigation in building cases might save a world of trouble to all concerned, and also ensure happy settlements on the lines I have indicated.—Yours faithfully,

MAURICE B. ADAMS [*F.*].

WHO IS THE ARCHITECT ?

To the Editor, JOURNAL R.I.B.A.,—

DEAR SIR,—Can nothing be done to drive it home to the daily Press that one of the most interesting things in connection with a building or work of craftsmanship is the personality of its author ?

Time after time we have descriptions of opening ceremonies in which the names of the dignitary officiating and all the bigwigs present, the owner or donor, possibly even that of the contractor, are given, together with an account of the materials, cost, history and purpose of the building or object ; but among all these details we look in vain for information as to the man to whose brain and hand we owe it all. In the case of a picture, a statue, a book or a musical work this omission would not occur.

In the last few weeks two glaring instances have occurred in the cross presented to Westminster Abbey and Messrs. Peter Robinson's new premises.

W. H. WARD [*F.*].

THE LAW OF BUILDING OUTSIDE LONDON.

To the Editor, JOURNAL R.I.B.A.,—

DEAR SIR,—Looking at the JOURNAL for 13 January, which contains the discussion on my paper of 18 December upon " Building Law," I see from your excellent report of my final speech that I was guilty of two slips which it may be worth while to correct, lest they puzzle anyone sufficiently interested to follow up my remarks.

In the rough notes I made during the discussion, I seem to have omitted one of Mr. Alban Scott's five points, lettered (*a*) to (*e*) at page 151 of your report. Therefore at page 153 I ought to have said that his first four suggestions (not three) were covered by the Departmental Committee's recommendations, and that it was the fifth (not fourth) which they considered and rejected. The second slip I made lay in putting this rejection, from memory, in paragraph 58. The true reference is 54.

If you can find space for these slight corrections you will increase my obligation to the JOURNAL and the Institute.—Yours faithfully,

A. N. C. SHELLEY.

The February number of *Architecture*, the Journal of the Society of Architects (monthly, 1s.) will be almost entirely devoted to the Wren bicentenary. Among the contributors on this occasion are J. St. Loe Strachey, John Freeman, Sir Lawrence Weaver, K.B.E., Professor Reilly, Charles Marriott, Trystan Edwards and the American architect Egerton Swartwout. There will also be a number of unpublished portraits of Wren, and several reproductions after original etchings by Frank Brangwyn, R.A.

VISIT TO FARMER AND BRINDLEY'S

ART STANDING COMMITTEE.

VISIT TO MESSRS. FARMER AND BRINDLEY'S WORKSHOPS.

The visit arranged by the Art Standing Committee to Messrs. Farmer and Brindley's workshops took place on Saturday, the 9 December, at 10.30, and was attended by about thirty-five members. Mr. Brindley, together with members of his staff, conducted the party round the workshops for an hour and a half, not too long a time in which to examine so much that was interesting.

There were great stocks of marble in the rough, as imported, some still showing the markings of the wire saws by which they were cut from the quarries in Greece. There were the mechanically operated frame saws which cut the blocks into thin slabs or smaller blocks. For trimming the edges of slabs a carborundum wheel, very like a circular saw in appearance, is used working at a very high speed and water cooled. The polishing of the slabs is done mechanically on an iron table, over which is a " bridge " and an eccentrically revolving flat iron frame, the working surface being of large iron studs at the beginning of the operation and of felt for the fine finish. Sand, emery and, finally, putty powder are used in the three stages of the polishing. A clever " sun and planet " motion causes the frame itself to revolve and so prevents any circular markings on the polished slab. Blocks are planed down to a true surface on a revolving iron table, about 12 feet in diameter. Wooden stops are fixed across the diameter of the table, against which the marble block is laid to be ground. Sand and water are thrown on the table as required, and the mason moves the block about at will, weighting one side or the other according as the wearing down of the marble takes place.

The moulding machine is much like a wood moulder in appearance and general working, but a carborundum wheel in the one takes the place of the steel knife in the other. As compared with wood moulding, the process is slow. The carborundum wheel is used with comparatively light pressure, and is said not to " stun " the stone to any appreciable extent as the older fashioned steel cutters did. Various sized wheels are used, but, unlike the wood-cutting knife, they are not made to the section of the moulding, which is worked out gradually to the lines marked on the end of the block of marble. Only slight undercutting can be done on this machine.

A 12-foot column in verte antique was being turned in a lathe, and this very interesting process attracted much attention. The polishing of moulded and carved work is done entirely by hand. Many stone carvers were at work on both architectural details and on statuary, the process of copying the plaster design in marble being explained.

From the architect's point of view, the great value in this visit was in seeing the methods by which the finished work is produced, in forming an opinion as to the use of machinery and its limitations in attaining that end, and in reimpressing upon his mind that his drawing board and tee square must not be allowed to tyrannise over his design.

At the conclusion of the visit, Mr. Brindley was thanked on behalf of the Art Standing Committee for his hospitality to members of the Royal Institute.

ARTHUR WELFORD [*A.*].

THE ST. PAUL'S CATHEDRAL FUND.

FINAL APPEAL.

The Council of the Royal Institute announce that on 22 January 1923 the subscriptions received towards the St. Paul's Cathedral Fund amounted to £137 18*s.* 6*d.*, including sums collected and forwarded by the Allied Societies.

The Council have decided once more to appeal to the members of the Royal Institute to take advantage of the unique opportunity which will occur on 26 February next of testifying in the most sincere manner possible to the memory of Sir Christopher Wren by helping in a practical way towards the preservation of the national monument which was his greatest work.

It is earnestly hoped that the sum to be handed to the Dean and Chapter on the occasion of the Celebration of the Bicentenary of the death of Sir Christopher Wren will be considerably in excess of the amount stated above, and that those members of the Royal Institute who have hitherto been prevented from contributing to the R.I.B.A. Fund will take the earliest opportunity of doing so. All remittances should be forwarded to the Secretary R.I.B.A.

R.I.B.A. ANNUAL CONFERENCE, 1923.

The Annual Conference of the R.I.B.A. and its Allied Societies will take place in Edinburgh on 13 to 16 June 1923. The Conference will be held in conjunction with the Annual Convention of the Incorporation of Architects in Scotland, and the arrangements for the Conference have been entrusted to the Council of that body, by whose invitation Edinburgh was selected as the place of meeting. A fully detailed programme will be published at an early date, and in the meantime *it is hoped that all members will make a note of the date and endeavour to arrange their engagements so as to permit them to make the journey to Edinburgh to take part in the Conference.*

R.I.B.A. STREET ARCHITECTURE MEDAL.

Members and Licentiates are informed that they need not submit a photograph and elevation of a building which they wish to nominate for the R.I.B.A. Street Architecture Medal, except in cases where they wish to nominate a building erected to their own designs. The Secretary R.I.B.A. has arranged to inform architects of buildings for which nominations have been received, and will invite them to send photographs and elevations for the Jury's consideration.

THE BRITISH EMPIRE EXHIBITION, 1924.

The President of the Royal Institute of British Architects has been appointed a Member of the Art Council of the British Empire Exhibition, 1924.

Allied Societies

LEICESTER AND LEICESTERSHIRE SOCIETY OF ARCHITECTS.

FIFTIETH ANNIVERSARY.

SPEECH BY MR. WATERHOUSE.

There was a large attendance of members at the Jubilee Dinner of the Leicester and Leicestershire Society of Architects which was held on 18 January. The guests included the President, R.I.B.A., Mr. Ian MacAlister (Secretary R.I.B.A.), Mr. R. Savage, President of the Birmingham Architectural Society, Sir Arthur and Lady Wheeler, and Mr. Stimpson, President of the Building Trade Employers.

Mr. William Keay, the President of the Society, was in the chair.

In welcoming the assembled company, Mr. Keay recalled some of the great names associated with their society—Ordish, Tait, Pick, Thompson.

Mr. W. K. Bedingfield proposed "The Royal Institute of British Architects," and said the Institute had done wonderful work in the direction of consolidating the profession of architecture in raising its ideals and in educating the younger generation. Unfortunately there was still some 40 per cent. of architects who were outside the Institute, which would not rise to its greatest influence until it embraced the whole of the profession.

Mr. Paul Waterhouse, in replying, said it was a bright spot in his presidency that the Leicester jubilee fell within its limits. No one realised more than architects the duty and blessedness of extending, not only sideways, but backwards and forwards. They were no good as architects unless they were links between the remotest past and the remotest future. A solitary architect was a contradiction in terms. It was only by association, friendship, and affection that they could do their work properly. Their business was to indulge in competition with one another tempered by friendship—an expression usually rendered by the common English word "sportsmanship." The growth of architectural education in the last two generations was one of the most remarkable things in England.

Mr. R. Savage (President of the Birmingham Society) proposed "Leicester City and Trade," and urged that Leicester should follow the example of Birmingham and start a Civic Society, which would, he thought, in time exercise a valuable influence in the direction of beautifying the city.

Mr. C. Bennion responded to the toast, and said Leicester was fortunate in that it had not felt the extreme distress of some other districts. Unfortunately the trouble on the Continent had put the clock back for the time being. There was no reason why, because they were a manufacturing city, they should be an ugly city. It was quite possible even for factories to harmonise with their surroundings and be beautiful to look upon.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

At a meeting of the Birmingham Architectural Association, held on Friday, 15 December, Mr. C. Grant Robertson, M.A., C.V.O., Principal of the Birmingham University, gave a lecture entitled "Provincial Universities and the study of Architecture."

The lecturer said that the seven provincial Universities each had their own particular area, and that no University encroached on the sphere of another. Thus Birmingham would not specialise in textiles, but rather in such branches as Mining and Electrical Engineering, as these were amongst the most important occupations of the Midland Counties. The influence of one faculty in a University on another was very beneficial, for by mutual criticism a general raising of standard was effected. Mr. Grant Robertson said that he would welcome a Department of Architecture in the University of Birmingham. It would improve the architecture in the city, and the criticism of the other faculties would bring about a greater appreciation of the fine arts by the general public. Such a department would have to start in a small way, and be built up as experience and application dictated.

Members of the profession would have to be consulted, and arrangements would have to be made which would enable students to spend part of their time in offices, for there were parts of an architect's education which could only be acquired by practical experience.

One fact which was not always realised was that an architect, like any other professional man, must have a good general education before commencing to study for his profession, and unless students could satisfy the authorities that they had sufficient ground work, they should not be admitted to the University.

At the conclusion of the lecture, Mr. E. P. Reynolds [*F.*] proposed a vote of thanks to the lecturer, which was seconded by Mr. B. J. Fletcher and carried with acclamation.

SHEFFIELD, SOUTH YORKSHIRE AND DISTRICT SOCIETY OF ARCHITECTS AND SURVEYORS.

Mr. J. Alfred Gotch gave a lecture on "The Notable Houses of Northamptonshire," before the Sheffield, South Yorkshire and District Society of Architects and Surveyors on January 11.

The lecturer stated that Northamptonshire was a county particularly rich in noble buildings, and showed how new churches were built and existing ones added to until the Reformation came, followed early by the dissolution of the monasteries, when church building practically ceased and a great period of house building began, which lasted from the middle of the sixteenth century till the Civil Wars of the next century, which diverted people's attention from building. Mr. Gotch said that Northamptonshire shared to the full in the building activities of the time and some of the largest private houses in the country were built during these years—Holdenby, Kirby and Burleigh, for example—whilst many were considerably enlarged, including Rockingham Castle, Drayton, Rushton, Apthorpe and Canons Ashby, in addition to which Dingley Hall was built, as well as many smaller manor houses.

Among other buildings of interest mentioned were the market-house at Rothwell, which was never finished; the very curious Triangular Lodge and the "New Building" at Lyveden, all built by Sir Thomas Tresham. The Triangular Lodge sets forth in stone the mystery of the Trinity, everything being in threes, there being three sides, three floors, three windows in each side on each floor and three

legends each with thirty-three letters. Sir Thomas, who was a deeply religious as well as a superstitious man, further emphasises these characteristics in the "New Building," evidently built for a dwelling-house, in that it is the shape of a cross, with equal arms, on plan, the cornices being decorated with carved symbols of the Passion, the crown of thorns, the hammer and nails, pincers, sword, spear, lantern and the sword of St. Peter with the ear of Malchus adhering to it.

At the conclusion of the lecture a cordial vote of thanks was proposed to Mr. Gotch by Mr. A. F. Watson, and seconded by Major C. B. Flockton.

LIVERPOOL ARCHITECTURAL SOCIETY.

The dinner in commemoration of the 75th anniversary of the formation of the Society, which was arranged for 1 March has been changed to take place on 6 March, at the Midland Adelphi Hotel. The Lord Mayor of Liverpool and Mr. Paul Waterhouse have accepted invitations to the dinner.

Obituary

GEORGE T. BROWN [*F.*].

Mr. Brown was elected a Fellow of the Royal Institute of British Architects in the year 1905. He was also a Fellow of the Surveyors' Institution and a past President of the Northumberland and Durham Branch of the Surveyors' Institution. He was President of the Northern Architectural Association in 1908–1909, and was on the Surveyors' Institution Panel of Referees in connection with the important work of arbitration for special references. He was from 1909 until the time of his death Hon. Secretary of the Northern Architectural Association.

The late Mr. Brown was a native of Sunderland, and had been in practice in that town for the past thirty years. His business was largely consultative, with special reference to colliery subsidence work, and his services were in great request in the North of England. With respect to his architectural work, his design was placed first for a large Training College on the Ford Estate near Sunderland before the war, but owing to changing circumstances this scheme was abandoned. He was also successful in a competition for the enlargement of the Sunderland Technical College, and several elementary and secondary schools in the district have been carried out under his supervision. He did a large amount of estate work and was responsible for the designing and carrying out of many industrial and other buildings in his district.

The following appreciation is quoted from one of the local papers :—

"Those of us who had the privilege of Mr. Brown's friendship remember his many sterling qualities, his largeness of heart, and his broad views. He has died possessed of, perhaps, what is the greatest test of all regard—the esteem of his fellow architects. He was endowed with every gift that made for a close and lovable friend and every quality that made him just and generous in controversy ; his was a nature that could accept honours with becoming grace and that could rejoice over a competitor's success.

"As an architect his works are outstanding. As an arbitrator his name was well known throughout the provinces and his services sought after as a skilful, true, and thoroughly reliable umpire. His particular work was of a most difficult character, and yet he always brought to bear on even the smallest case a uniform sense of justness and fairness and a spirit of appreciation of the other man's point of view.

"Some of his fellow townsmen have had the opportunity of judging the vast amount of comparatively unseen work G. T. Brown has done for public charity. Many of our town know also of his work on public committees and his ceaseless activities for good. Perhaps, however, his greatest work, the work he did for the Northern Architectural Association, is not so well known to the general public. His services, both as President and as Hon. Secretary, will never be forgotten by his brother architects. He exerted himself particularly to further the interests of the younger men of his profession, and it was largely due to him that this year a school of architecture was founded in connection with the Armstrong College, Newcastle-on-Tyne."

The business of the late Mr. Brown will be carried on by his son, Mr. G. Talbot Brown, Associate of the Royal Institute of British Architects.

C. GLYNN EVANS [*F.*].

Mr. C. Glynn Evans [*F.*], The Croft, Neath, who died on 9 January, was a pupil and afterwards an assistant of Mr. J. Cook Rees, Neath. He subsequently became chief assistant to Messrs. Wm. Griffiths & Son, Llanelly, and was admitted an Associate in 1912. In 1913 he opened in practice in Neath and soon began to make a name in domestic architecture. He was appointed architect to the Neath Housing Scheme in conjunction with the late Borough Engineer, Dr. D. M. Jenkins. In 1921 he was elected a Fellow of the Institute.

Mr. Evans's life from childhood had been a struggle against ill-health, but he seldom complained, and his cheery optimism deceived casual friends with regard to the extent of his sufferings.

John Bennie Wilson [*F.*]. President of the Glasgow Inst. of Architects in 1910, and representative of that body on the R.I.B.A. Council, 1910.

G. G. Fleming [*Licentiate*].

Percy Walker [*Licentiate*].

R.I.B.A. Prizes and Studentships, 1923

Deed of Award

The designs and drawings submitted for the Prizes and Studentships in the gift of the Royal Institute are now on exhibition in the R.I.B.A. Galleries, 9 Conduit Street, and will remain open to members and the public until 5 February (10 a.m. till 8 p.m.; Saturdays, 5 p.m.). The Council's Deed of Award, read at the General Meeting of 22 January, gives the results as follows—

THE ROYAL INSTITUTE SILVER MEDALS.

(1) *The Essay Medal and Twenty-five Guineas.*

Five Essays were received for the Silver Medal under the following mottoes :—

1. " Argumentum ad Judicium " : The Architectural Problem of the Modern Shop.
2. " Aristus " : An Introduction to the Theory of Architecture.
3. " Korea " : The Study of Sound in its Relation to the Design of Buildings.
4. " Petivi " : The Most Genial Artist of his Time, Pirro Ligorio of Naples, Rome and Ferrara.
5. " Poffergy " : Flats.

The Council have awarded the Silver Medal and Twenty-five Guineas to the author of the Essay submitted under the motto " Aristus."*

(*ii*) *The Measured Drawings Medal and Fifty Pounds.*

Three sets of drawings were sent in of the several buildings enumerated under mottoes as follows :—

1. " Cheddar " : 2 strainers (Chapel of St. Anselm, Chester).
2. " Diligente " : 4 strainers (The Palazzo Horne, Firenze).
3. " Oxnop " : 8 strainers (Campidoglio, Rome).

The Council have awarded the Silver Medal and Fifty Pounds to the delineator of the Drawings submitted under the motto " Oxnop."†

THE TRAVELLING STUDENTSHIPS.

(*i*) *The Tite Prize and One Hundred Pounds.*

Nine designs for an Italian Embassy in a European Capital were submitted under the following mottoes :

1. " B. O." : 3 strainers.
2. " Utinam " : 3 strainers.
3. " Sebastian " : 3 strainers.
4. " Poffergy " : 4 strainers.
5. " Geneva " : 3 strainers.
6. " European " : 3 strainers.
7. " Tishy " : 5 strainers.
8. " Blue Square " : 4 strainers.
9. " Tujja " : 4 strainers.

The Council have awarded the Certificate, and, subject to the specified conditions, the sum of One Hundred Pounds to the author of the design submitted under the motto " Tujja,"‡ and a Certificate of Hon. Mention to the author of the design submitted under the motto " Poffergy." §

(*ii*) *The Pugin Studentship and Seventy-five Pounds.*

Two applications were received for the Pugin Studentship from the following gentlemen :—

1. G. H. R. Heritage : 4 strainers.
2. A. Newton Thorpe : 4 strainers.

The Council have awarded the Medal, and, subject to the specified conditions, the sum of Seventy-five Pounds, to Mr. A. Newton Thorpe, Cemetery Lodge, Fulford, York.

(*iii*) *The Owen Jones Studentship and One Hundred Pounds.*

One application was received from the following gentleman :—

C. F. Filbey : 6 strainers.

The Council have awarded the Certificate and, subject to the specified conditions, the sum of One Hundred Pounds, to Mr. C. F. Filbey, 123 Crystal Palace Road, East Dulwich, S.E.22.

(*iv*) *The Henry Saxon Snell Prize and Fifty Pounds, increased on this occasion to Sixty Pounds owing to the generosity of Mr. A. Saxon Snell.*

Eight designs for a Maternity Home and Infant Welfare Centre were submitted under the following mottoes :—

1. " Ad Rem " : 1 strainer.
2. " Roona " : 1 strainer.
3. Crane (device) : 2 strainers.
4. Three Diamonds (device) : 2 sheets.
5. " Knype " : 4 sheets.
6. " Solomon " : 2 strainers.
7. Square and Compass (device) : 3 strainers.
8. " Ursa " : 4 strainers.

The Council have awarded, subject to the specified conditions, the Prize of Sixty Pounds to the author of the design submitted under the motto " Ad Rem,"‖

* " Aristus " : Lionel B. Budden, M.A., A.R.I.B.A., Withinfield, Heswall, Cheshire.

† " Oxnop " : Wesley Dougill, B.Arch., Liverpool, A.R.I.B.A., " The Lees," 58 Calthorpe Road, Edgbaston, Birmingham.

‡ " Tujja " : John Chiene Shepherd, A.R.I.B.A., 51 Torrington Square, London, W.C.1.

§ " Poffergy " : Miss Isabel M. Chambers, " The Priory," Roehampton, S.W.15.

‖ " Ad Rem " : Ernest G. Theakston, F.R.I.B.A., 12 New Court, Lincoln's Inn, London, W.C.

and Certificates of Hon. Mention to the authors of the designs submitted under the motto of " Roona,"* and the device of a Crane.†

(*v*) *The Godwin Bursary and Wimperis Bequest : Silver Medal and one Hundred and Thirty Pounds.*

Six applications were received for the Godwin Bursary and Wimperis Bequest from the following gentlemen :—

1. W. T. Benslyn [*A.*].
2. L. H. Bucknell [*A.*].
3. S. W. Milburn [*A.*].
4. W. S. Purchon [*A.*].
5. E. W. B. Scott [*A.*].
6. A. F. Wickenden [*A.*].

The Council have awarded the Medal, and, subject to the specified conditions, the sum of One Hundred and Thirty Pounds to Mr. W. T. Benslyn, A.R.I.B.A., 42 West Side, Wandsworth Common, S.W.

The Grissell Gold Medal and Fifty Pounds.

Four designs for a Warehouse were submitted under the following mottoes :—

1. " Rivet " : 2 strainers.
2. " Syntithemi " : 6 strainers.
3. Fleur de Lys (device) : 5 strainers.
4. " Bluzz " : 2 strainers.

The Council have awarded the Medal and Fifty Pounds to the author of the design submitted under the motto " Rivet."‡

The Ashpitel Prize, 1922.

The Council have, on the recommendation of the Board of Architectural Education, awarded the Ashpitel Prize (which is a Prize of Books, value £10, awarded to the candidate who has most highly distinguished himself among the candidates in the Final Examinations of the year) to Mr. Alexander Simpson Reid [*A.*], of 221 Clifton Road, Aberdeen, Probationer, 1921, Student, 1921, and who passed the Final Examination, July, 1922.

Competitions

BRECHIN WAR MEMORIAL COMPETITION.

Members and Licentiates of the Royal Institute of British Architects must not take part in the above competition because the conditions are not in accordance with the published regulations of the Royal Institute for architectural competitions.

BOURNEMOUTH PAVILION COMPETITION.

The President of the Royal Institute of British Architects has nominated Sir Edwin Cooper, F.R.I.B.A., as assessor in this competition. IAN MACALISTER, Sec.

* " Roona " : G. B. E. Norburn, A.R.I.B.A., The Crossways, Northwood, Ramsgate, Kent.

† Crane (device) : Alfred John Brown, A.R.I.B.A., 35 Handside Lane, Welwyn Garden City, Herts.

‡ " Rivet " : Percy Morrey, M.B.E., A.R.I.B.A., Wynhill, Bramhall, Cheshire.

Notices

The Seventh General Meeting (Ordinary) of the Session 1922–23 will be held on Monday, 5 February 1923, at 8.30 p.m., for the following purposes :—

To read the Minutes of the General Meeting (Ordinary) held on 22 January 1923 ; formally to admit members attending for the first time since their election ; announce names of candidates nominated by the Council for election to the various classes of membership.

To announce the Council's nomination for the Royal Gold Medal 1923.

The President to deliver his Address to Students and to present the Prizes and Studentships awarded by the Council for 1923.

Mr. Henry V. Ashley [*F.*], to read a Criticism on the designs and drawings submitted for the Prizes and Studentships.

R.I.B.A. SESSIONAL PAPERS PROGRAMME.

The Paper on " Tradition and Originality in Italian Renaissance Architecture," which was to have been read by Mr. Geoffrey Scott on 28 May, has had to be postponed until next session. Mr. Delissa Joseph, F.R.I.B.A., has accepted the Council's invitation to read a paper entitled " Building Heights and Ancient Lights," on the vacant date.

REINSTATEMENTS.

The following Members and Licentiates have been reinstated :

As Fellow : T. Butler Wilson.
As Associate : Harry Thomas Bill.
As Licentiate : Hugh Campbell.

BOARD OF ARCHITECTURAL EDUCATION.

R.I.B.A. INTERMEDIATE AND FINAL (AND SPECIAL) EXAMINATIONS.

The Intermediate and Final (and Special) Examinations wil be held this year (1923) on the following dates :

INTERMEDIATE EXAMINATION.

1, 4, 5, and 7 June 1923—Last day for receiving applications, 28 April.

23, 26, 27, and 29 November 1923—Last day for receiving application, 27 October 1923.

FINAL (AND SPECIAL) EXAMINATIONS.

14, 15, 16, 18, 19, and 21 June 1923—Last day for receiving applications, 5 May.

6, 7, 8, 10, 11, and 15 December 1923—Last day for receiving applications, 3 November.

R.I.B.A. SPECIAL WAR EXAMINATIONS.
UNSUCCESSFUL CANDIDATES.

The Council R.I.B.A. have resolved that candidates who have sat for and failed to pass the Special War Examination shall be allowed to sit for the Special Final Examination (without the submission of probationary work) at any time before the end of 1925.

Candidates who have failed in the Special War Examination on only one occasion will not be required to pay a further fee for one attempt at the Special Final Examination, but candidates who have failed at the Special War Examination on more than one occasion will be required to pay the ordinary fee for the Special Final Examination—viz., £10 10s.

Members' Column

NOTIFICATION FROM THE HONG-KONG GOVERNMENT *GAZETTE*, PUBLISHED BY AUTHORITY, FRIDAY, DECEMBER 15TH 1922.

EXECUTIVE COUNCIL.

No. 543.—His Excellency the Governor in Council has been pleased to direct under Section 7 of the Public Health and Buildings Ordinance, 1903, Ordinance No. 1 of 1903, that the name of Mr. G. F. Ronald Sample, A.R.I.B.A., M.S.A., be added to the list of Authorised Architects published in Government Notification No. 178 of the 13th April 1922.

Council Chamber.
14th December 1922.

A. D. BALL.
Clerk of Councils.

MESSRS. SEARLE & SEARLE.

Mr. Leonard Keir Hett [F.] and Mr. Arthur Frank Allen [Licentiate] have joined Messrs. Searle & Searle as partners from 1 January 1923.

MESSRS. GEO. T. BROWN & SON.

The practice of the late Mr. Geo. T. Brown [F.], F.S.I., will be continued at 51, Fawcett Street, Sunderland, under the name of Geo. T. Brown & Son.

PARTNERSHIP WANTED.

A.R.I.B.A., 20 years' general London and country experience (exclusive 4 years' war service) and five years' private practice, desires partnership with established architect. Apply Box 2213, c/o The Secretary R.I.B.A., 9, Conduit Street, W.1.

OFFICE ACCOMMODATION.

ARCHITECT is desirous of sharing his London offices, with use of separate room. Apply, Box 2313, c/o The Secretary R.I.B.A., 9, Conduit Street, London, W.1.

APPOINTMENTS WANTED.

ASSOCIATE R.I.B.A., with 12 years' experience in good New York City offices, including Cass Gilbert, Trowbridge and Ackerman, J. Armstrong Stenhouse, Fredk. Sterner, finds it desirable for family reasons to return to England, and would be glad to hear of any suitable proposition. Previously in practice in London. Now and for past two years engaged as designer with one of the best known younger New York men. For further information apply Box 1513, c/o Secretary R.I.B.A., 9, Conduit Street, W.1.

ARCHITECT'S ASSISTANT, A.R.I.B.A., shortly disengaged: ⅛ in. working drawings, ½ in. and F.S. details. Experienced designer. Domestic, public office, and bank work. Accustomed to supervising and preparing drawings on the actual job. Moderate salary. Apply Box 281, c/o Secretary R.I.B.A., 9, Conduit Street, W.1.

ARCHITECTURAL ASSISTANT requires post in any capacity. Many years experience in the Tropics and South Africa. Married; 35. First-class draughtsman; excellent references. An immediate appointment is essential. Not afraid of real work. Apply Box 445, c/o Secretary R.I.B.A., 9, Conduit Street, W.1.

A.R.I.B.A. urgently requires post, 14 years varied experience of good-class work in Scotland and England. Excellent draughtsman, first-class designer, capable of preparing drawings from sketches, full size and ½ in. details, etc. Society of Architects prizeman. Part time not objected to. Box 2013, c/o Secretary R.I.B.A., 9, Conduit Street, W.1.

ARCHITECTURAL JUNIOR ASSISTANT requires post. London preferred, Age 23. Four years' varied experience (London). First-class draughtsman. Excellent references.—Apply Box 999, c/o Secretary R.I.B.A., 9 Conduit Street, W.1.

GENTLEMAN WITH CAPITAL, A.R.I.B.A., varied experience in London and provinces—travelled—good designer and capable business man with practical knowledge, requires share in bona-fide practice or Senior Assistant's post with view to same. Box 2513, c/o Secretary R.I.B.A., 9, Conduit Street, London, W.1.

A.R.I.B.A. and P.A.S.I., brought up to private practice, but who since his demobilisation from the Army has held, and still holds, a permanent position as quantity surveyor on the staff of the Borough Engineer's Department of a County Borough, desires to work in association with a London architect of standing who is a capable designer. Advertiser is fully competent to prepare all working drawings, write specifications, prepare bills of quantities, and to adjudicate accounts at completion of contracts. Apply, Box 2413, c/o The Secretary R.I.B.A., 9, Conduit Street, London, W.1.

Minutes VI

SESSION 1922-1923

At the Sixth General Meeting (Ordinary) of the Session 1922–1923, held on Monday, 22 January 1923, at 8 p.m.—Mr. Paul Waterhouse, President in the chair. The attendance book was signed by 30 Fellows (including 11 Members of the Council), 83 Associates (including 3 Members of the Council), 12 Licentiates, and a large number of visitors.

The Minutes of the Fifth General Meeting, held on 8 January 1923, having been taken as read, were confirmed and signed by the Chairman.

The Hon. Secretary read a letter from Sir Edwin Cooper thanking the members for the vote of congratulation passed at the last meeting.

The Hon. Secretary announced the decease of Mr. John Bennie Wilson, elected Associate in 1882 and Fellow in 1910; Mr. Charles Glynn Evans, elected Associate in 1912 and Fellow in 1921: Mr. G. G. Fleming, elected Licentiate in 1911; and Mr. Percy Walker, elected Licentiate in 1910, and it was RESOLVED that the regrets of the Royal Institute for the loss of these members be recorded in the Minutes and that a message of sympathy and condolence be conveyed to their relatives.

The following members, attending for the first time since their election, were formally admitted by the President:—

Mr. T. A. Darcy Braddell [*F.*],
Mr. A. J. Brown [*A.*],
Mr. John Clack [*A.*],
Mr. E. L. Gunston [*A.*],
Mr. H. A. J. Lamb [*A.*],
Mr. C. J. Norton [*A.*],
Mr. F. A. Richards [*A.*].

Mr. W. E. Riley [*F.*], assisted by Mr. Ralph Knott [*F.*], having read a paper on "The London County Hall," on the motion of Mr. Francis R. Anderton, Chairman of the London County Council, seconded by Mr. Andrew T. Taylor [*Retired Fellow*], a vote of thanks was passed to Mr. Knott and Mr. Riley by acclamation, and was briefly responded to.

On the motion of Professor A. Beresford Pite [*F.*], it was RESOLVED that the Royal Institute of British Architects does hereby express to the London County Council its appreciation of their courage and success in providing London with a monumental civic building.

The Secretary having read the Deed of Award of Prizes and Studentships made by the Council under the Common Seal, the sealed envelopes bearing the mottoes of the successful competitors were opened and the names disclosed.

The proceedings closed at 9.45 p.m.

Arrangements have been made for the supply of the R.I.B.A. JOURNAL (post free) to members of the Allied Societies who are not members of the R.I.B.A. at a specially reduced subscription of 12*s.* a year. Those who wish to take advantage of this arrangement are requested to send their names to the Secretary of the R.I.B.A., 9 Conduit Street, W.1.

Members sending remittances by postal order for subscriptions or Institute publications are warned of the necessity of complying with Post Office Regulations with regard to this method of payment. Postal orders should be made payable to the Secretary R.I.B.A., and crossed.

IAN MACALISTER,
Secretary R.I.B.A.

R.I.B.A. JOURNAL.

Dates of Publication.—1922: 11th, 25th November; 9th, 23rd December. 1923: 13th. 27th January; 10th, 24th February; 10th, 24th March; 14th, 28th April; 12th May; 2nd, 16th, 30th June; 14th July; 18th August; 22nd September; 20th October.